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NORTH PARK

HABITAT MANAGEMENT PLAN

CO-01WHA-2

NORTH PARK HABITAT

MANAGEMENT PLAN

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NORTH PARK HABITAT MANAGEMENT PLAN (HMP)

A. Introduction

Physical Description

The North Park Habitat Management Plan encompasses approximately 1,063,000 acres of land. Public lands administered by the Bureau of Land Management total 193,600 acres, comprising 18 percent of this area. Other federal agencies administer 341,700 acres, while the State of Colorado controls 124,000 acres. The remaining 403,500 acres is in private ownership.

Location

The boundaries of the North Park Habitat Management Plan (HMP) coincide with those of Jackson County which include Colorado Division of Wildlife's big game management units 6, 16, 161, and 17. The Colorado-Wyoming state line forms the northern boundary; the western and southern boundaries are delineated by the Continental Divide, Park Range, and Rabbit Ears Range, respectively; and the Medicine Bow Range forms the eastern boundary (see Figure 1).

Physiography

Jackson County, more commonly called North Park, is an intermountain park or topographic basin. The floor of the basin is approximately 1,000 square miles and is relatively level. The basin is surrounded on three sides by mountains that rise to heights of 2,000 to 5,000 feet above the basin bottom. North Park is bounded on the west by the Park Range, the south by the Rabbit Ears Mountains, and on the east by the Medicine Bow Mountains. Elevations range from 7,800 feet to 12,950 feet above sea level. As mentioned, there

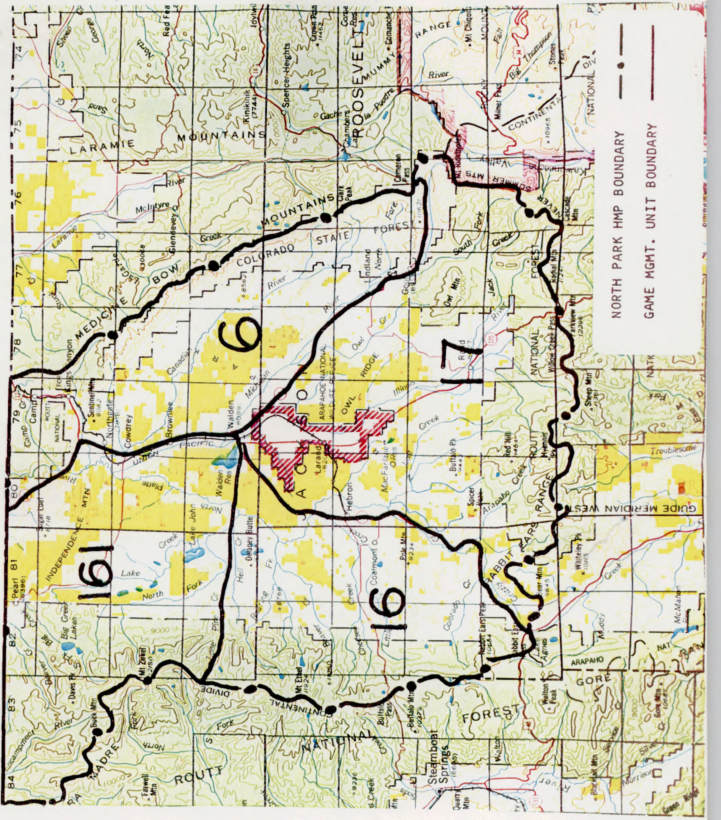

Figure 1. Map of North Park HMP area and Colorado Division of Wildlife Big Game Management Units within the HMP area.

are 193,600 acres of public lands administered by BLM in the HMP area (see Map 1, Appendix 1).

Geologically, North Park is a large synclinal, north-south trending trough confined on the east by the Medicine Bow Mountains uplift, and on the west by the parallel uplift of the Park Range.

Along the eastern border of the county are the Medicine Bow Mountains and the Never Summer Mountains. The former extend north from Cameron Pass into Wyoming and consist chiefly of a core of crystalline rocks (probably pre-Cambrian in age). Near the northern boundary are exposures of pre-Cambrian granites and metamorphic rocks. At Cameron Pass are andesite and basalt flows of Quaternary and late Tertiary age. South of the pass, and for a few miles to the north, pre-Cambrian rocks consisting chiefly of hornblende gneiss and greenstone are exposed along the Never Summer Mountains. Much of the western side of these mountains consists of pre-Cambrian metamorphic rocks.

The Park Range, along the western border of North Park, is composed of rocks similar to those of the Medicine Bow and Never Summer Ranges. It is estimated from the thickness of the sedimentary sections exposed on either side of the park, and from the elevation of the cyrstalline peaks above the park floor, that the amount of the uplift probably exceeded 20,000 feet.

The uptilted sedimentary rocks along the park's lateral confines range in age from possibly Late Paleozoic and Tertiary Chugwater formation, through Jurassic Morrison formation; Upper Cretaceous; Dakota sandstone, Benton shale, Niobrara formation, Pierre shale, and Coalmont formation.

The main area of the park is mantled by Eocene rocks of the Middle Park formation. A long tongue of the Miocene North Park formation almost bisects the park, stretching from Owl Mountain on the east to the confluence of of Roaring Fork and Grizzly Creeks on the west. The base of this tongue on the east is partly covered over by a large area of Quaternary talus and landslides which curves westerly along the southern boundary of the county and stops against a large flow of Quaternary or Late Tertiary rocks.

Minerals

In the northeastern part of the field, coal-bearing strata crop out on the flanks of the McCallum anticline. At least three beds are present: the lower bed occurs immediately above the top of the Pierre shale and ranges from 10 to 58 feet in thickness; the upper two beds are about 2,000 feet stratigraphically above the lower bed and are lenticular in character and are split by many carbonaceous shale partings. Maximum thicknesses reported are eight feet for the lower of the two beds and twelve feet for the upper bed, which is about 300 feet higher stratigraphically. The inclination of the strata in the McCallum anticline area ranges from 20 to 85 degrees.

In the southwestern part of the field, at least four and possibly five coal beds are present, the uppermost of which has been reported to attain a thickness of 66 feet. About 360 feet below the upper bed is a five-foot bed of soft, shaley coal. A bed of coal 12 feet thick occurs about 1,000 feet below the five-foot bed, and an eighteen-foot bed is present about 1,250 feet below the twelve-foot bed. Another bed, which contains 8½ feet of coal with one parting, could not be correlated with the lowermost of the above-mentioned beds. Beekly (1915, p. 105) believed that it was lower stratigraphically than any of the four beds cited above. The inclination of the strata ranges from 10 to 20 degrees. Four other isolated occurrences of coal beds, which could not be correlated with other coal beds in the field, were reported by Beekly (1915, p. 107-109).

Analyses (U.S. Bureau of Mines, 1937, p. 84-87) show that the coal is subbituminous B in rank. Reserves were estimated from information obtained from Beekly (1915), the U. S. Bureau of Mines (1937), the Colorado State Planning Commission, and Annual Reports of the Colorado State Coal Mine Inspection Department. A total of about 3,735 million tons of subbituminous coal is estimated to have been originally present in 102 square miles of the field. An additional area of about 748 square miles may be underlain by coal beds of minable thickness. In an unknown part of this additional area, the coal beds are probably at depths greater than 3,000 feet.

Presently, there are two operating strip mines in Jackson County, operating on private coal lands.

Oil and Gas:

Oil and gas exploration and production has been increasing in the county since 1926, when the first producing well was discovered. Presently, there are seven oil and gas fields in Jackson County producing one-half million barrels of oil and 5½ million cubic feet of gas (mostly CO2) annually. The seven fields and their locations are:

	Location of Discovery Well				
Field Name	Sec.	Twp.	Range	County	Discovery
Battleship	23	10 N.	79 W.	Jackson	1954
Canadian River	11	9 N.	78 W.	"	1956
Carlstrom	30	10 N.	79 W.	"	1972
Coalmont	35	7 N.	81 W.	"	1973
Lone Pine	28	9 N.	81 W.	"	1971

Location of Discovery Well

(continued)

Field Name	Sec.	Twp.	Range	County	Discovery
McCallum	12	9 N.	79 W.	Jackson	1926
McCallum - South	34	9 N.	78 W.	"	1927

Fluorspar:

The Northgate fluorspar district is in Jackson County, on the southwest flank of the Medicine Bow Range. It is about 13 miles north of Walden. The bedrock of the Northgate district consists chiefly of pre-Cambrian granite, hornblende gneiss and schist, and biotite schist. One fluorspar vein is partly in arkose, sandstone, and conglomerate. The fluorspar occurs along steep faults and shear zones; chalcedony and a little pyrite and calcite accompany the fluorite.

The fluorspar reserves of the Northgate district are very large. Indicated ore reserves in the five known deposits at Northgate (in partly explored bodies) totals 213,000 tons, probably averaging 40 to 50 percent of CaF2. In addition, 370,000 tons of fluorspar averaging more than 35 percent of CaF2 is inferred.

Sand and Gravel:

Sand and gravel have been extracted from the course of the Michigan River north of Walden as far as the county line; from Camp Creek in the northeast corner; in the vicinity of Coalmont from Newcomb and Little Grizzly Creeks; south of Hebron from Grizzly Creek; and in the vicinity of Spicer, from Arapaho Creek. Other possible sources are the Quaternary terrace deposits east and west of Spicer.

Vermiculite:

Vermiculite deposits in northeastern Jackson County near the Wyoming border have been known, prospected, and exploited to some extent for a number of years. These occur in pre-Cambrian terrain consisting of granite, hornblende gneiss, granite gneiss, hornblende-biotite schist, and cross-cutting pegmatite dikes. The vermiculite developed from alteration of the hornblendic rocks. The three deposits in the area are all within the southeast quarter of Township 12 North, Range 80 West. Only one of these, the Resort Deposit, appears economically promising.

Precious and Base Metals:

Production of these metals has occurred in the past, but they are presently not being mined in any significant amount. Several mining districts have been established, and they are:

District	Location	Metals
1. Independence Mt.	T. 11 N., R. 81 W.	Gold,silver,lead,copper,z
2. Pearl	T. 12 N., R. 81 and 82 W.	Copper,zinc,gold,silver,l
3. Teller	T. 5 N., R. 77 W.	Silver, copper

Geothermal Energy:

Geothermal occurrence is known to be in the county, primarily in the south and west portions, but little is known about its potential for development.

Water

Jackson County is in the Missouri hydrologic region and the Platte

River sub-basin. North Park forms the headwaters of the North Platte River. The floor of the basin is interspersed by numerous slow, meandering streams that come together in the north center of the county, flowing into the North Platte. The main tributaries are the Michigan, Illinois, and Canadian Rivers, and Grizzly Creek. Adjacent to these inland waterways are associated flood plains and flood hazards. This natural characteristic will enhance many habitats for target species.

Major water bodies in the county are Big Creek Lakes, Lake John, Delaney Lakes, Boettcher Lakes, Seymour Reservoir, Walden Reservoir, and Cowdrey Reservoir. There are also numerous small reservoirs, stock ponds, and springs scattered throughout the county. Surface water quality is good to excellent, with soluble salts found in low concentrations. Some exceptions are the alkali lakes and ponds that have no inlets or outlets. Here salt concentrations are quite high.

The USGS has sampled the groundwater in the county and found it suitable for domestic and livestock use, but there are high amounts of iron and fluoride in the water.

Soils

Jackson County soils represent three major types with many inclusions of soil associations and, at the highest elevations, a small amount of the alpine soils. The three major soil types are those formed at the higher elevations on moderately steep to very steep slopes, those formed on the upland benches and terraces, and those formed at the lower elevations on gently sloping terraces and flood plains.

1. Those soils formed on the high mountain slopes are presently supporting

a conifer timber stand or aspen and/or sagebrush with an understory of grasses and forbs. The conifer soils are gray in color due to leaching with cementation present in the zone of accumulation. The soil structure is characteristically weak and the level of fertility low. These soils are often quite shallow, cold, well-drained, and acidic in character. The profile commonly has large amounts of gravel, cobbles, or boulders. The lower profile normally has greater amounts of clay. The high mountain soils supporting aspen and/or sagebrush and grass are darker in color, reflecting a higher content of organic matter and, thus, a higher level of fertility. The profile normally has large amounts of gravel, cobbles, or boulders present. The zone of accumulation is not normally cemented as in the conifer type, and the structure is also better. The profile may range from shallow to quite deep and is generally acid. These soils commonly have inclusions of rock outcrops and other minor soil association; the conifer type is valuable for timber production and watershed, while the aspen/brush type is primarily of importance for grazing and watershed. Soils in this major type are formed under greater amounts of precipitation (from 15 inches upward) than the other soils formed here. The high mountain soils are normally quite well drained.

2. Those soils formed on upland benches and terraces are medium to sandy-textured soils typical of the arid and semi-arid plains and uplands. These soils normally have a heavier "B" horizon and are more compact with more lime than the top soil. The soil depth ranges from quite shallow to deep, with the profile generally being quite well-drained, with gravel and cobbles in much of the profile. The topography ranges from moderately steep to gently sloping. These soils are formed under less

precipitation than the high mountain soils (normally less than 15 inches). The upper profile is generally colored from grayish to light brown, increased organic matter being reflected in the darker colors. These soils normally support stands of sagebrush with an understory of native grasses.

3. Those soils formed on gently sloping terraces and the valley flood plains are generally deep, poorly, or somewhat poorly drained. The soils formed on the flood plains contain more clays in the profile and are much darker in color than those on the terraces above them. The lower terrace slopes are less well-drained than those above them but have a much higher percentage of sands in the profile. They are developed under very limited precipitation (9 inches per year), contain low amounts of organic matter, and are much lighter in color than the flood plain soils.

Most of this third type of soils are presently supporting grasses and sagebrush. Much of the area they encompass is within reach of irrigation water from the large number of streams flowing through the valley. The lands being irrigated are used as pasture and hay land with very little introduced species of grasses and legumes. These soils reflect a relatively high level of fertility. The lowland soils of the park are less subject to erosion than those at higher elevation.

All the soils in the county are formed under cool summer temperatures and very cold winter temperatures. Soil development is slow throughout the county, with low precipitation becoming an important factor with decreasing elevation. The soils are formed from a great variety of parent materials which produce varied soil association inclusions throughout the county. All the county soils are susceptible to accelerated erosion if the vegetative cover is removed.

Table 1 provides the characteristics of the dominant soils found within the area. Potentials are generally limited by soil depth and precipitation; however, alkalinity, slope, or parent material influences potential on certain sites.

Table 1
CHARACTERISTICS OF DOMINANT SOILS

Association Number	Series Composition	Range Site	Physiographic Features	Depth and Texture	Aspect	Production #/Ac Air Dry
155	Randman (SL) Blackwell Dobrow	Mountain meadow	Swales, valleys or parks	Loams; moderate	Grasses & forbs (willows near streams)	2,000
156	Spicerton Stump	Alkaline slopes	Valley benches and slopes	Loam to clay loam scabby; shallow	Big sage & greasewood	400
157	Fleutch Bosler Tealson	Valley bench	Rolling valley bench	Sandy-clay loam; mod. shallow	Sagebrush & grass	500
158	Tiago Cabin	Dry mountain loam	Sloping to steep hilly	Sandy loams; shallow	Sagebrush & grass	500
159	Coalmont Brinkert Aaberg	Claypan	Moderate to steep	Clay; shallow	Low shrub & grass	300
161	Bangston Tine	Sandy bench	Undulating to steep benches	Sandy; moderate	Sagebrush & grass	500
162	Crespin Sudduth Gothic	Mountain Shale 1/	Gentle to steep shale hills	Clay and shales; shallow	Grass and shrubs	200
164	MacFarlane Pinkham	Not Classified	Mountains & uplands	Variable	Conifer forest	20 cu ac/yr.

1/ Further refinement is necessary in defining Sudduth and Gothic series composition.

Range

The major vegetative cover types found in Jackson County are irrigated cropland, grass, sagebrush, conifer, and broadleaf trees. The sagebrush type consists primarily of big sage with an understory of native perennial grasses and forbs. The conifer type is composed primarily of lodgepole pine with some sub-alpine and Englemann spruce present. There is sparse understory in the conifer type. The broadleaf type is composed of aspen with an understory of native annual and perennial grasses and forbs. The principal uses made of each cover type are as follows: (1) irrigated croplands--hay production; (2) sagebrush--livestock grazing, wildlife grazing and habitat; (3) conifer--wildlife habitat and timber production; (4) broadleaf--livestock grazing, wildlife grazing and habitat. (See Map 2 , Habitat Types; URA Step 3, Veg. Type Map; and MFP Step 3, Range Overlay.)

The livestock industry is the major economic base for the county, with cattle being the predominant class of livestock. The primary seasons of use are spring and fall at the lower elevations and summer at the higher elevations. There are 70 permittees operating on 196 allotments in Jackson County. Allotments range from a few acres to thousands of acres of public lands. However,smaller allotments are generally more frequent.

There are three AMP's within the area considered for this plan. These are defined as follows; only the Brownlee AMP has been implemented.

Allotment or Permittee	Acres of Public Land	AUM's
Brownlee	2,554	262
Carlstrom	2,342	376
Horn	2,035	237

Forestry

There are 32,880 acres of forested land within the North Park Planning Unit, or 15% of all public lands in the unit. An additional 370,000 acres are within the HMP area, but outside the planning unit. Lodgepole pine, aspen, and spruce-fir comprise most of the forested acreage.

The planning unit was divided into seven forest compartments, and each compartment was split into subcompartments. This was done to divide the planning unit into smaller, more workable units for future forest management. (Refer to Overlay, Step 3, Forest Products, No. 1.)

The climate limits the forested areas and can be characterized by short, cool summers and long, cold winters. Precipitation varies from 15 to 25 inches, with approximately 50% of the precipitation occurring as snow. The average growing season is less than 40 days.

Quantification of forested areas within the North Park area is further defined by Table 2. Areas cut over that opened the canopy for modification of the forested types are also listed in Table 7. These areas include:

Unit	Acres Cut	Years
Bull Mountain	1,850	1953-70
	200	1970 to present
Independence Mountain	2,850	1953-1964
Ridge	69	1958
Buffalo Peak	190	1971

Areas having received forest development practices are shown on the next page.

Unit	Acres	Treatment	Year
Bull Mountain	43	Seeded (LP)	1964
	161	Tired & Chained	1974
	220	Tired & Chopped	1974
Independence Mountain	82	Slash Burned	1963
	41	Seeded (LP)	1964
	40	Snags Fallen	1967

NORTH PARK URA

Table 2

Productive and Non-Productive Forest Acreages by Type, Size Class, and Density

Forest Type, Size Class, & Density*	Acres of Productive Forest Land	Acres of Non-Productive Forest Land	Total Acres of Forest Land
LODGEPOLE PINE:			
LP 9≡	1,340	--	1,340
LP 9=	1,060	--	1,060
LP 9-	390	--	390
LP 9≡/8-	40	--	40
LP 9=/8≡	1,380	--	1,380
LP 9=/8=	3,510	--	3,510
LP 9=/8-	160	--	160
LP 9-/8≡	420	--	420
LP 9-/8=	620	--	620
LP 9-/7≡	300	--	300
LP 8≡	3,690	--	3,690
LP 8=	3,190	--	3,190
LP 8-	270	240	510
LP 8-(L)	200	--	200
LP 8=/7=	230	--	230
LP 8-/7≡	840	--	840
LP 8-/7=	560	--	560
LP 8-/7=(L)	440	--	440
LP 7≡(S)	510	--	510
LP 7≡(L)	400	--	400
LP 7=(L)	20	--	20
LP 6 (B)	1,330	--	1,330
	20,900	240	21,140
LIMBER PINE:			
L 9-	--	60	60
TOTAL:	--	60	60
SPRUCE/FIR:			
SF 9≡	150	--	150
SF 9=	250	--	250
SF 9-	110	--	110
SF 9-/8=	180	--	180
SF 8≡	170	--	170
SF 8=	10	--	10
TOTAL:	870	--	870

(Continued on next page)

NORTH PARK URA

Table 2 (continued)

Productive and Non-Productive Forest Acreages by Type, Size Class, and Density

Forest Type Size Class, & Density	Acres of Productive Forest Land	Acres of Non-Productive Forest Land	Total Acres of Forest Land
DOUGLAS FIR:			
D 9≡	260	--	260
D 9=	190	--	190
D 9-	-	10	10
D 9-/8≡	100	--	100
D 8=	20	--	20
D 8-	-	30	30
D 7 (L)	70	--	70
TOTAL:	640	40	680
PONDEROSA PINE:			
P 9-	-	320	320
TOTAL:	-	320	320
ASPEN:			
A 8	-	9,810	9,810
TOTAL:	-	9,810	9,810
TOTAL-- ALL FOREST LANDS:	22,410	10,470	32,880

*LP = Lodgepole pine
L = Limber pine
SF = Spruce-Fir
D = Douglas fir
P = Ponderosa pine
A = Aspen

9 = Sawtimber (7.6" dbh and above)
8 = Pole size (5.0" - 7.6" dbh)
7 = Saplings and seedlings
6 = Not fully stocked (burned or recently logged areas)

≡ - Well Stocked
= - Medium Stocked
- - Poorly Stocked

(S) Stagnated
(L) Logged Over
(B) Burn Area

Recreation

There are numerous geological resources that are unique and interesting in the county. One of the most important is the North and East Sand Hills area. The sands were deposited at the base of the Medicine Bow Mountains by the westerly winds blowing across the park floor. There is no apparent wilderness or roadless area of 5,000 acres or more within the planning unit.

There are numerous paleontological sites in the county where fossils have been found. Rockhounding areas are scattered throughout the area, with petrified wood, agates, jasper, etc., being found.

North Park is rich in history, including the Ute and Arapaho Indians first arriving in the early 1700's; white men first arriving in 1817; Kit Carson, Jim Bridger, and others entering the park for hunting and trapping; and the period between 1870 and 1900, when miners arrived to prospect.

No archaeological survey has been done in these areas. Local residents report some sites in:

TEPEE RING AREAS

T. 6 N., R. 80 W.

T. 7 N., R. 78 W.

T. 7 N., R. 79 W.

T. 8 N., R. 80 W.

T. 10 N., R. 79 W.

T. 10 N., R. 78 W.

T. 11 N., R. 80 W.

T. 11 N., R. 81 W.

INDIAN BATTLEFIELD

T. 11 N., R. 81 W.

INDIAN BURIAL TREE

T. 11 N., R. 79 W.

OLD ARMY CAMP SITE

T. 11 N., R. 79 W.

INDIAN GRAVE

T. 7 N., R. 79 W.

OLD PLACER MINE

T. 11 N., R. 81 W., section 25

BLM is funding two archaeological survey contracts in North Park in FY 77 for the North Sand Hills and for the potential EMARS tracts. The results of this work will be appended to this EAR when they are available.

The complete recreation analysis of North Park is presented thoroughly within the URA, Steps 3 and 4, and the MFP, Step 3. The above historical and cultural values are augmented by a diversified flora and fauna that create an environment unique to Colorado for outdoor recreation. Hunting, fishing, camping, ORV activities, sightseeing, picnicking, winter sports, and other outdoor activities attract many residents and non-residents alike throughout the year.

Tourism is a big business in North Park, with the industry primarily based on wildlife. This plan, therefore, will issue a stabilized base for expansion of the industry as huntable populations reach objective levels.

Climate

The climate is characterized by long cold winters, short cool summers, low to moderate precipitation, and a short growing season. Extreme seasonal and daily temperature variation occurs. A maximum high temperature of 94°F and maximum low of -49°F have been recorded at Walden. In summer, daytime highs reach the 80's, while freezing may occur at night. Temperature inversions occur almost daily (80% of the time) in the Walden area. These disperse by late morning in summer but may remain for days or weeks in winter.

Average annual precipitation ranges from 10 inches at Walden to nearly 60 inches at Mt. Ethel. Snow is generally dry with low moisture content. Walden's average annual snowfall is 48 inches, while 89 inches is reported at Spicer, southwest of Walden. Prevailing westerly winds blow nearly continuously.

Wildlife Habitat--Terrestrial

Elevational variation in the HMP area allows considerable habitat type diversity. Ten habitat types are represented, as well as many subtypes. Table 3 shows acreages of habitat types and percentage of the total that each represents.

Coniferous forest and sagebrush are the most common habitat types. These types cover 34 and 33 percent of the total area, respectively. The lodgepole pine subtype comprises 66% of the coniferous forest type in the HMP area, while spruce-fir represents 34%. Lodgepole pine generally grows in pure stands of widely varying density, vigor, age, and size class. Altitudinal range for this type is 8,100 feet to 10,000 feet. Little understory vegetation exists in most lodgepole stands.

Spruce-fir occurs on moist sites above 9,000 feet. Stands are generally dense with an understory of huckleberry (Vaccinium spp.). Open parks, meadows, and streamsides within the coniferous type provide some habitat diversity and wildlife forage (grasses and forbs).

The sagebrush type occurs at elevations of 7,900 to 8,500 feet. Growth form, density, and vigor of sagebrush exhibits great variation, depending upon site characteristics of soil and moisture. Understory composition and density is variable but usually dominated by perennial grasses and forbs. Rabbitbrush dominates on some sites.

Irrigated meadows occupy 12% of the HMP area. These occur along natural water courses and irrigation ditches at the lower elevations. Hay is produced on these meadows, with timothy, bromegrass, and clover being the primary species. Native grasses, sedges, and rushes also occur.

Upland deciduous forest type, dominated by quaking aspen, comprises 9% of the area. Aspen occurs on mountain slopes at nearly all elevations. Stands are generally open, with an understory of shrubs, forbs, and grasses.

Alpine tundra occurs above 11,000 feet and comprises 6% of the habitat area. Dominant plants are grasses, forbs, and sedges.

Grassland, greasewood, and mountain shrub types each represent 1% of the HMP area. Although they comprise only a small part of the total area, these types do provide habitat diversity and additional browse and grass for forage. The mountain shrub type browse species are much preferred and of high nutritional value to big game.

Riparian habitat occurs along water courses throughout the area at all elevations. Approximately 1,600 miles of rivers and streams provide riparian habitat,which comprises 2% of the total area. Willow is the dominant plant species. Water covers about 1% of the total HMP area.

NORTH PARK HMP

Table 3

WILDLIFE HABITAT TYPES

Habitat Type	Dominant Plant Species	Acreage	Percent Total
Alpine	Carex		
	Febr		
	Anten	64,640	6
Conifer	Pico (66%)		
	Psme (Trace)		
	Pien (34%)	52,150	
	Abla	322,150	34
Upland Deciduous	Potr		
	Carex		
	Juncus	95,500	9
Grassland	Stipa		
	Ag sp		
	Poa		
	Kocr	12,080	1
agebrush	Artr		
	Chrys		
	Af sm		
	Poa	351,960	33
Mountain shrub	Amal		
	Putr		
	Symph		
	Cemo	6,930	1
Greasewood	Save		
	Kocr	7,875	1
Irrigated Meadow	Bromus		
	Carex		
	Phleum		
	Trifo		
	Juncus		
	Deca	132,860	12
Riparian	Salix	20,600	2
Aquatic		8,015	1
		1,063,000	

(See Appendix II for complete listing)

Aquatic

There are 36 streams in the North Park Habitat Management Area which carry a permanent flow and cross public lands on at least one point. Total stream mileage on public lands is 34.28. These 34.28 miles of stream are divided into 79 segments, the longest segment being a 3.04-mile stretch of Grizzly Creek.

Lack of public access to many of these stream segments and their small average length (0.43 miles) severely limit habitat management capabilities. Additionally, many of the streams listed carry such a small flow that management as a stream is unfeasible, and fisheries potential exists only through reservoir construction.

There are eight lakes in the North Park Habitat Management Area which offer potential for fisheries production and lie within or adjacent to public land. Of the eight lakes, four have public access: Cowdrey Lake, Lake John, Walden Reservoir, and Seymour Lake. Hecla Reservoir, MacFarlane Reservoir, Sneed Reservoir, and Boettcher Lake do not have access. The lakes with access are stocked and managed by the DOW.

Wildlife Values

Approximately 240 species of birds,mammals,fish, reptiles and amphibians are known to inhabit the North Park Habitat Management Area. (See Appendix V, Checklist of Fauna of North Park HMP.) This game and nongame wildlife provides opportunities for consumptive and nonconsumptive use. Economic, recreational, aesthetic, education, and scientific benefits result from the continued existence of these animals.

Some wildlife species classified as threatened or endangered by federal or state agencies have been observed in the HMP area as follows: peregrine falcon, greater sandhill crane, white pelican, and green-back cutthroat trout. Historically, the grizzly bear, gray wolf, Canada lynx, river otter, and wolverine occurred in North Park. R. B. Gill, Colorado Division of Wildlife, reported sighting two gray wolves on the south side of Diamond Mountain early in the winter of 1971-72.

B. Management Objectives (Table 4 at the end of the Planned Action section summarizes the objectives, methods, and evaluations for the HMP. Each objective is identified by a code number; e.g., MD-1, P-2, etc.)

OBJECTIVES:

The overall objective of the North Park Habitat Management Plan (HMP) is to improve or maintain habitat for approximately 240 species of wildlife. The proposed actions and related projects designed to meet the objectives are directed to public lands, although private, National Forest, and state lands are encompassed within the HMP area.

Public lands within the North Park proper are underlain with energy-mineral resources that will eventually be developed. Most minerals underlie public lands that are superposed with the sagebrush vegetative type and, in most areas, this type provides critical habitat components for a variety of wildlife species. Mineral development (and associated energy production and transmission) and urbanization will result in long-term losses of sagebrush habitat critical to a variety of wildlife species.

Mitigation for wildlife habitat losses to mineral development will be extremely difficult. Irreplaceable wildlife habitat components may be lost in some areas, particularly those associated with coal development.

As a mitigation to these losses, lands with wildlife habitat values commensurate to those lands developed for minerals should be acquired and managed as wildlife habitat. These lands would be acquired by the private industries initiating energy development and management of these lands be granted to the Bureau of Land Management. Other uses of these lands would be complimentary to the integrity of existing habitat values. Appendix II lists priority for acquiring lands recommended to mitigate habitat losses to energy development.

The following is a list of specific objectives for priority wildlife species as determined according to BLM Manual 6620 and discussion with Colorado Division of Wildlife personnel.

Antelope

Public lands in North Park provide 135,000 acres of antelope habitat within the HMP area.

The Colorado Division of Wildlife estimates the present antelope population at 500. The herd has gradually increased in recent years from a point of near decimation to levels where harvests are justified.

The Division of Wildlife (DOW) has established objectives to increase antelope in all management units except one, where the objective is to hold the population at the present level. Projects listed in the HMP are directed toward habitat improvement to attain population objectives established by DOW and BLM.

Potential antelope habitat losses to mineral development exist within the HMP area. Prime antelope habitat lies within the areas designated as priority for coal, oil and gas development areas. Habitat preservation and improvement will be directed to those areas with mineral development potential.

The antelope objectives are:

A-1: Improve habitat in Game Management Unit A-8 to support a breeding population of 150 antelope with a harvestable surplus of 40 per year.

A-2: Increase antelope numbers by 50 in each of Game Management Units A-6, A-7, and A-9 to achieve a breeding population of 600 in these units by 1993.

A-3: Determine vegetative composition, condition, and trend of 135,000 acres of public land antelope habitat by 1983.

A-4: Determine extent of interstate antelope migration to and from Wyoming and effects of movement on North Park herd size and:

(a) List limiting factors to herd on Colorado and Wyoming side.

(b) Implement results where limiting factors can be reduced or eliminated.

Elk

Primary elk use of public land within the HMP area occurs during winter on 36,000 acres of winter range within the aspen-sagebrush associations. Most winter range is located on higher elevation ridges and benches within Game Management Units (GMU's) 6, 17, and 161. Intensive inventories have not been conducted to determine conditions of winter ranges. However,they are considered to be in fair condition.

The elk population within the HMP area is believed to have increased in recent years and is currently estimated at 3,000 by the Colorado Division of Wildlife. The DOW has established, as a herd objective, to hold the elk at the present population level. The North Park HMP objectives for elk are:

E-1: Improve 70,000 acres of public land elk habitat in GMU's 6, 17, and 161 to support 1,000 elk by 1983, by providing the following habitat type compositions:

- (a) Cover and Food--Winter: 40% cover: aspen, lodgepole; 60% open: mountain shrub, big sagebrush. Summer: 60% cover: lodgepole pine, aspen, spruce, fir; 40% open: mountain meadow, mountain shrub.

E-2: Determine the vegetation composition, condition, and trend of 35,700 acres of elk winter range in GMU's 6, 17, and 161 by 1983.

E-3: Locate elk calving grounds on 15,000 acres of public land summer habitat in GMU's 17 and 161 by 1993.

E-4: Determine the intensity of elk movement from summer range in GMU 17 to winter range in GMU 18 by 1983.

E-5: Improve 16,000 acres of public land elk winter range in GMU's 17 and 161 by reserving: (a) 75% of current annual growth of browse, and (b) 50% of yearly grass production.

E-6 Increase elk hunter success from an average of 12% to 20% within the HMP area by 1993.

Mule Deer

The mule deer population within the North Park HMP area has experienced the decline in numbers characteristic of populations throughout the western United States. Degradation of habitat, severe winter losses, and liberal hunting seasons appear to be primary factors responsible for the mule deer decline in North Park. The current mule deer population is estimated at 2,000 by the Colorado Division of Wildlife (DOW), and 3,000 deer has been proposed as an objective population level for the HMP area by DOW.

Public land provides most of the mule deer winter range within the HMP area. These ranges are generally located on ridges and flats that are vegetated with sagebrush-associated vegetation complexes. Day-long exposure to sun and wind usually allows these areas to remain relatively snow-free during critical winter periods.

Deer winter range habitat sites are characteristically in areas where the soil productivity potential is low, and which are low in annual precipitation. These two environmental factors result in minimal annual vegetation growth on species available to deer for winter food and cover. Consequently, most forage on deer winter range is low in vigor and may become unavailable during winters of extremely heavy snow accumulations. The low productivity potential and low annual precipitation also limits the success of vegetative improvement projects on deer winter ranges in North Park.

Deer winter range quality and quantity has been greatly reduced as the result of mineral development on public lands in North Park. Strip coal mines, oil and gas fields, and associated roads and exploration trails have greatly reduced and restricted deer use of winter range in

North Park.

Some critical winter ranges are underlain with coal deposits ear-marked for development in the near future. The potential exists for loss of many acres of critical winter range to coal development. Preservation and improvement of critical deer ranges are addressed in the North Park HMP.

The mule deer objectives are:

MD-1: Determine vegetation composition, condition, and trend of 60,500 acres of public land winter range by 1983.

MD-2: Maintain 40,000 acres of deer winter range in existing condition in GMU's 6, 17, and 161 until results of the North Park Range Fertilization are evaluated.

MD-3: Increase deer numbers by 250 in each of GMU's 6, 16, 17, and 161 to attain an annual breeding population of 3,000 by 1993.

MD-4: Improve 27,000 acres of mule deer summer range by providing a 60% cover (aspen, lodgepole, spruce, fir) and 40% open (mountain shrubs) habitat composition by 1983.

MD-5: Improve 7,300 acres of fall-spring range in GMU's 6, 17, and 161 by reserving 50% of the current annual browse growth and 50% of the annual forb production for mule deer.

Sage Grouse

The North Park HMP area currently supports a fall population of approximately 10,000 sage grouse, according to DOW estimates. Public lands provide more than 130,000 acres (or 40%) of sage grouse habitat within the HMP area.

Sage grouse habitat in North Park has been subjected to vegetation manipulation and eradication during the past 40 years. Sagebrush plowing and spraying to improve livestock forage production reduced the quantity of sagebrush habitat type and altered sage grouse distribution within North Park.

Development of coal, oil and gas has added to the reduction of grouse habitat. The construction of oil well pads, maintenance of roads, exploration trails,and storage facilities reduced the amount of sagebrush habitat available as well as prompted an increase in continuous human use of mineral areas in North Park. Sage grouse use declined markedly in these areas.

In 1963, the Colorado Game, Fish and Parks Department began a study to determine the effects of sagebrush eradication on a population of sage grouse in North Park, Colorado. The study resulted when the Bureau of Land Management informed the Colorado Game, Fish and Parks Department of its intentions to eradicate, by aerial application of herbicides, approximately 4,000 acres of sagebrush land in the northwestern corner of North Park, Jackson County, Colorado. The site they had selected for treatment involved an area regarded as one of the best sage grouse habitats in the state.

Recognizing the need for research, the Colorado Game, Fish and Parks Department entered into an agreement with the Bureau of Land Management providing for a two-year, pre-treatment study. The objective of the study was to determine the daily and seasonal distribution of sage grouse in the area and the relative abundance of the different sex and age groups present. The agreement provided for the Colorado Game, Fish and Parks Department to recommend basic patterns of treatment, either block spraying or strip spraying or combinations of both methods. Following treatment of sagebrush, a continuing two-year study was to determine the effects of the herbicide treatment upon the distribution and abundance of sage grouse.

The study continued through 1973 and,after a review of the results, a decision was made in 1974 to expand the area to all of North Park. The results of this study are available in the Kremmling Resource Area Office.

Sagebrush eradication to improve livestock grazing has ceased on public land in North Park, but sage grouse face the possibility of further habitat loss to energy development.

Prime sage grouse winter concentration areas and strutting grounds are underlain with coal deposits earmarked as priority for development. Oil and gas fields in prime grouse habitat continue to expand, resulting in further habitat loss to tramroads, drill site construction, and other activities related to development. The North Park HMP recognizes potential for loss and addresses the preservation and improvement of sage grouse habitat requirements in areas of potential mineral development.

The objectives for sage grouse are:

SG-1: Improve 130,000 acres of sage grouse habitat by providing an average vegetation composition of 40% grass, 40% forb, and 20% shrub.

SG-2: Maintain 21,000 acres of sage grouse winter concentration areas in present condition.

SG-3: Maintain 30 sage grouse strutting grounds active in 1977 and all new grounds located thereafter in existing condition.

SG-4: Improve 300 acres of sage grouse brooding habitat.

SG-5: Identify additional sage grouse brooding areas, winter concentration areas, and strutting grounds on 130,000 acres of sage grouse habitat.

Waterfowl/Shorebirds

The North Park HMP area provides habitat for a variety of waterfowl and shorebird species. The widespread high elevation streams, beaver dams, and lakes provide waterfowl habitat as do the streams, rivers, and lakes of the park proper.

The Colorado Division of Wildlife rates North Park as the second most important duck production area in the entire state. Only the San Luis Valley produces more ducks annually than does North Park. These ducks are a valuable international resource for both the Central and Pacific Flyways. Throughout the flyways, suitable waterfowl and shorebird nesting habitat is being extensively lost due to drainage of wetlands through changes in land use.

Public lands within North Park provide a variety of waterfowl and shorebird habitats. Water bodies such as Walden Reservoir, MacFarlane Reservoir, Boettcher Lake, Damfino Reservoirs, and the Hebron Sloughs provide brooding, nesting, resting, and feeding habitat.

The Hebron Slough area has high potential for development into a prime waterfowl habitat area. Numerous natural potholes, lakes, and wet meadow type drainages currently provide nesting habitat in years of high water runoff. Annual waterfowl production depends upon the amount of natural water available to attract breeding ducks and shorebirds prior to the breeding season. During dry years similar to 1977, virtually no production occurs because of the lack of water to attract breeding waterfowl or shorebirds.

Craig District of BLM and the DOW have recently entered into a cooperative agreement to develop the Hebron Slough into a permanently productive waterfowl habitat area. The assurance of a permanent spring water source for the area will be implemented to create permanent aquatic habitats within the slough area. Other planned actions such as protective fencing to enhance shoreline waterfowl and shorebird nesting cover vegetation are also planned for various aquatic habitats within the HMP area. Appendix VII contains a detailed habitat improvement plan for the Hebron Slough area.

The objectives are:

WS-1: Improve 3,000 acres of nesting, brood rearing, and resting habitat in the Hebron Sloughs project area for waerfowl and shorebirds by 1990. Production increases per year by 1990 include: (1) 1,000 ducks, (2) 50 geese, and (3) variable shorebirds.

WS-2: Maintain the Hebron Sloughs area as a discrete ecological unit for all wildlife species, with priority given to aquatic flora and fauna where efficiency of surface and subsurface water use has to be tightly regimented.

WS-3: Improve favorable aquatic and edge habitat over 800 acres within the Planning Unit, other than Hebron Sloughs, to support 10 nesting pairs of Canada Geese, with an average brood size of four goslings per pair by 1990.

WS-4: Determine condition and trend of waterfowl and shorebird habitat along 35 miles of perennial streams on public lands by 1985.

WS-5: Improve nesting and brooding cover on Spring Creek to support 10 pairs of nesting ducks and ten pairs of shorebirds by 1985.

WS-6: Improve waterfowl and shorebird nesting and brooding habitat on 13 livestock water and watershed impoundments by 1985.

WS-7: Improve 3 miles of shorebird, duck, and goose habitat along the north and west shores of Walden Reservoir. Create and amintain a nesting and brooding habitat.

WS-8: Improve 200 acres of seasonally flooded basin habitat at Alkali Lake to enhance shorebird and waterfowl production by 1983.

Blue Grouse

Detailed blue grouse habitat and population status information is lacking within the HMP area; however, stable populations exist in suitable habitats. The DOW estimates the current population level at 20 blue grouse per square mile of suitable habitat in North Park. The forested public lands located on Independence Mountain, Buffalo Peak, and Owl Mountain provide suitable blue grouse habitat.

The HMP objective for blue grouse is:

BG-1 Provide habitat requirements to sustain an average of 20 blue grouse per square mile on 27,000 acres of aspen-conifer-mountain meadow-riparian habitat types as shown on Map 5.

Threatened or Endangered, and Sensitive Species

Public lands within the HMP area may support three terrestrial wildlife species classified as threatened or endangered by the Colorado Division of Wildlife.and the U.S. Fish and Wildlife Service.

The black-footed ferret, the greater sandhill crane, and the peregrine falcon may inhabit the HMP area,as potential habitat for each species does exist. The greater sandhill crane and the peregrine falcon are observed annually in North Park; however, nesting sites or other special use areas have not been located. White-tailed prairie dog towns are sparsely located on public lands within the HMP area, but black-footed ferret sightings have not been confirmed in any of these towns to date.

The HMP objectives for threatened or endangered and sensitive species are:

TE-1 Determine the habitat and population status of the black-footed ferret and the peregrine falcon within the HMP area by 1980.

TE-2 Determine greater sandhill crane limiting factors on 6,000 acres of scattered tracts of public land in the southwest corner of the HMP area by 1980. Preserve the existing habitat character until study is completed, and apply results.

TE-3 Maintain the existing habitat (60% sagebrush, 40% aspen-conifer, adjacent to three miles of sheer cliffs, rock outcrops) along the west side of Sheep Mountain to provide a release site for at least one pair of peregrine falcons by 1983. Buffer by one-half mile or physiographic features as presented on Map 6.

S-1 Protect all identified raptor nesting sites and adjacent habitat. Locate and protect all newly identified raptor nest sites and adjacent habitat.

Bighorn Sheep

Sheep Mountain and Watson Mountain historically provided bighorn sheep habitat in North Park, but recent sheep observations in these areas have not been confirmed. The U. S. Forest Service and the Colorado Division of Wildlife have proposed two sheep introductions within the HMP area. Sheep Mountain may provide winter habitat for bighorns released near Red Canyon.

The HMP objective for bighorn sheep is:

BS-1 Determine suitability of 3,800 acres of public land on Sheep Mountain as bighorn sheep winter range by 1980.

Moose

The Division of Wildlife and the Routt National Forest have proposed to reintroduce moose into the southeast corner of the HMP area on the Routt National Forest. The initial moose release was scheduled for winter of 1977; however, poor snow conditions negated trapping efforts in Utah and introduction stock was not obtained.

Public land in North Park comprises about 2.4 percent of the anticipated moose distribution for the next 20 years. A copy of the moose introduction proposal is available in the Kremmling Resource Area Office.

The HMP objective for moose is:

M-1 Determine the effects of moose on 3,800 acres of public lands within the anticipated distribution area if the proposed transplant is deemed successful (see Colorado DOW Moose Reintroduction on file in Kremmling Resource Area Office). Provide necessary habitat components, as defined in the plan,upon public land.

Non-Game

Comprehensive data concerning the population and habitat status of the numerous species of non-game mammals, birds, amphibians, and reptiles have been collected in North Park.

As opposed to the game species found in the HMP area, non-game wildlife provide less recreation opportunities and are, therefore, of less economic value. The true value of non-game wildlife lies in their role as important components of the North Park ecosystem.

The objectives for non-game wildlife are:

NG-1 Minimize losses of small birds and mammals in stock tanks.

NG-2 Determine habitat and population status of amphibians and reptiles within the HMP area by 1993.

NG-3 Determine population status of coyotes and their impact on the North Park wildlife habitat area ecosystem by 1993.

NG-4 Maintain aspen-lodgepole pine habitat type for 20 species of forest-nesting raptors and songbirds on 27,000 acres of public land within the HMP area.

NG-5 Provide 90% vegetative ground cover along 32 miles of perennial streams on public land to support 80 species of songbirds and 30 species of mammals, as listed in the North Park URA.

Furbearers

The objective for furbearers is:

FB-1 Provide the necessary terrestrial and water-associated habitats to maintain the existing populations,as found of those mammals classified as furbearers and recognized by the DOW as such,through trapping or hunting regulations.

FISHERIES

OBJECTIVES NARRATIVE

Streams

An extensive field study of the streams listed on Table 6 was initiated in 1976 to update the existing data base and to formulate plans and identify management capabilities on the public lands. The analysis which follows is intended to identify management needs and capabilities for the 36 streams. Additional information can be found on the North Park URA/MFP overlays in the Craig District Office. The following is a brief description of the main streams in the North Park HMP area.

North Platte River

The North Platte presently provides a high quality, nationally recognized brown trout fishery. There is a total of 46 miles of the North Platte within the North Park Planning Unit (PU). Only 16% of this total (7.49 miles) is currently available for public fishing. Most of this public fishing access (6.74 miles) is provided through Colorado Division of Wildlife leases and cooperative agreements with private landowners and BLM, respectively.

The aquatic and riparian habitats of the North Platte are presently in excellent condition. There is a total of 1.92 miles of public land in 10 segments which adjoin the North Platte. Consequently, little can be done on public lands to effectively manage the riparian habitat.

However, public lands could best be used to provide access points for float fishing trips on the North Platte. The 10 segments of public lands are strategically located and could eventually provide for float trips

TABLE 6

Perennial Streams in the North Park Habitat Management Area which Cross Public Land [5]

Stream	Miles on Public Land	Segments	Avg Width (ft)	Avg Flow (cfs)	[1] Bottom Comp.(%)	[2] Pool/Riffle Qual	Conductivity (µmhos)	[3] Fish Species	[4] Riparian Veg.	Riparian Width(ft)
North Platte River	1.92	10	75	450	--	--	--	B,L,C, R,WS	W,S	100
South Fork Big Creek	2,08	1	25	38 (7-28-76)	B(20) R(30) C(25) F(25)	1/1	50	B,L	W,A,S,G	75
Wheeler Creek	0.56	2	3	0.96 (7-28-76)	R(5) C(30) F(30) S(15) Si(15)	3/1	120	B	W,G	50
Troutman Draw	1.48	1	1.5	0.17 (7-28-76)	F(30) S(50) Si(20)	1/3	120	None	W,S,G	30
Spring Creek	0.64	1	--	None (7-28-76)	--	--	--	--	W,P	--
Threemile Creek	1.75	1	2	0.50 (7-28-76)	R(50) C(20) F(20) S(10)	3/2	--	None	AS,W,P	50
North Fork North Platte River	1.28	5	20	70	No Data-	Big Horn Ranch would not permit access		B,L,R, WS	W,S	75
Lake Creek	1.20	6	4	8	--	--	--	B	W,S	50
Republic Creek	1.00	1	3	0.13	R(20) C(50) F(20) S(10)	3/2	60	B	W,A,S,G	50
Lone Pine Creek	0.30	1	No Data- Big Horn Ranch Wouldn't Permit Access				--	--	--	--
Shafer Creek	0.52	2	No Data- Big Horn Ranch Wouldn't Permit Access				--	--	--	--
Goose Creek	0.32	1	No Data- Big Horn Ranch Wouldn't Permit Access				--	--	--	--
Sunday Creek	0.30	1	No Data Available		--	--	--	--	--	--
Darling Creek	0.10	1	No Data available- Access?			--	--	--	--	--
Little Grizzly Creek	0.08	1	No Data Available		--	--	--	--	--	--
Doran Creek	0.01	1	No Data Available- Access?			--	--	--	--	--

St n	Miles on Public Land	Segments	Avg Width (ft)	Avg Flow (cfs)	1/ tom .(%)	2/ Pool/Riffle Qual	Conductivity (µmhos)	3/ Fish Species	4/ Ripsrian Veg.	F risn h n(ft)
Coon Creek	0.90	1	1.5	0.39 (7-30-76)	C(30) F(30) S(30) R(10)	4/2	60	None	As,W,A,S G	100
Pinkham Creek	0.10	1	--	No Data	--	--	--	--	--	--
Camp Creek	0.10	1	--	No Data- Access?		--	--	--	--	--
TOTAL	34.28	79								

1/ B-boulder, R-rubble, C-coarse gravel, F-fine gravel, S-sand, Si-silt, Sh-shale

2/ Pool Quality rated on a scale of 1-4
Riffle quality rated on a scale of 1-5

3/ B-Brook trout, C-Cutthroat trout, L-Brown trout, R-Rainbow trout, WS-White sucker, CCb-Creek chub, LD-Longnose dace

4/ W-Willow, As-Aspen, A-Alder, P-Pine, S-Sedge, G-Grass, SB-Sage brush

5/ Public Land refers to BLM administered lands.

which would cover 39.28 miles (85%) of the river. This 39.28 miles begins 1.56 miles downstream from the confluence of Grizzly and Little Grizzly Creeks, where the North Platte is formed, to the Forest Service access point 5.12 miles upstream from the Wyoming State Line or just before the river enters Northgate Canyon. Float fishing would occur primarily during the higher flows of spring and early summer.

One of the greatest obstacles to be overcome in initiating this project will be improving the attitude of ranchers toward fishermen. This will take a considerable public relations effort.

South Fork Big Creek - South Fork Big Creek supports excellent brown and brook trout populations. It represents one of the best fishing opportunities on public lands in North Park, since the 2.08 miles crossing public land is in one continuous segment. Additionally, when the creek leaves public land, it flows for another 5.4 miles through the Medicine Bow National Forest. The riparian and aquatic habitats are currently in excellent condition.

North Fork North Platte River - The North Fork North Platte River currently provides a good brook, rainbow, and brown trout fishery which is, for all practical purposes, inaccessible to the public due to closures by the Big Horn Ranch.

This problem should be remedied by obtaining easements from the Forest Service to alter the existing road through Section 36, T. 11 N., R. 82 W., and connecting the Hill Ranch with the Big Creek Lakes Road. This would open more than 2,500 acres of federal land to public recreation. Included on this federal land is 1.28 miles of the North Fork North Platte River as well as its confluence with Shafer Creek (0.12 miles) and its confluence with

Goose Creek (0.4 miles).

Those portions of North Fork North Platte River, Goose Creek, and Shafer Creek on public lands should be fenced to prevent damage from cattle grazing and to clearly delineate public lands for fishing purposes.

Lake Creek - Lake Creek presently provides water for Lake John and is accessible to the public where it crosses public land, so should not be treated with further management techniques.

Goose Creek - Goose Creek should be managed in conjunction with the North Fork North Platte River.

Beaver Creek - Beaver Creek supports excellent brown and brook trout populations. However, it is currently leased by a sportsmen's club and is inaccessible to the public. There is 0.6 mile of the creek on public lands. An attempt should be made to purchase or obtain easements.

Grizzly Creek - Grizzly Creek represents the longest continuous segment of stream crossing public lands in North Park (3.04 miles). An additional 3.25 miles of Grizzly Creek cross public lands in eight segments. Grizzly Creek suffers from heavy loads of siltation and turbidity, and therefore supports a large population of white suckers and only small numbers of brooks, browns, and rainbows. The entire creek more or less parallels and is accessible from Highway 14.

An intensive study is needed to determine soil and hydrologic characteristics and watershed management problems related to the larger amounts of sediments entering Grizzly Creek waters. When the study is completed and the causes and correctives for Grizzly Creek have been determined, action should be taken to implement these correctives.

It is certain that cattle wading in the creek play a significant part in keeping the sediments stirred up in Grizzly Creek. Therefore, fencing should be required on all public land stream frontage to restrict cattle grazing back at least 50 feet on either side of the stream with designated watering points every 0.5 mile.

Even though the Grizzly Creek trout population is presently small, public stream fishing access is in low supply in North Park and public land access points along Grizzly Creek should be well marked with signs in FY 78. Trout reproductive success is presently low due to the heavy silt load. However, forage is abundant in the form of white suckers, creek chubs, and longnose dace. The adult brown trout presently inhabiting the creek seem to be doing well on this food supply. The Colorado Division of Wildlife should therefore be requested to begin stocking at least 200 brown trout fingerlings (2"-4") per mile of Grizzly Creek in FY 78. If these fingerlings cannot be obtained from State hatcheries, federal sources should be used. Growth and survival of fingerling plants should be investigated annually, so that numbers and/or size of fish planted can be adjusted accordingly.

Limitations of present technology and scattered land ownership patterns are two factors which will increase the difficulty of improving the Grizzly Creek watershed. The proposed comprehensive watershed management study should spell out specific techniques which are applicable to Grizzly Creek and its tributaries, and pinpoint areas where these techniques can be implemented. Fisheries techniques which presently appear applicable to the watershed include rip-rapping of high cut banks, fencing the stream to eliminate or severely reduce in-stream cattle wading, reducing the beaver and rough fish populations, and strategic placement of low-head dams and diversions to wash out pools and create spawning beds. However, these management techniques should not be implemented until recommendations from the watershed study have been thoroughly reviewed and specific plans can be formulated.

Indian Creek - Indian Creek is a small trout stream which parallels Grizzly Creek and should be included in the Grizzly Creek watershed study. The trout population (brook and brown trout) is not large and is presently dominated by white suckers due to a sedimentation and turbidity problem similar to that of Grizzly Creek. Access to Indian Creek is by county road and this stream has the potential of providing a good brook/brown trout population if the sedimentation problem could be improved. When the Grizzly Creek watershed study is completed in FY 78, and the potential for improving watershed management is determined, Indian Creek should be evaluated for improvement through placement of in-stream devices which will create deeper pools and spawning beds. It will also be necessary to initially increase the trout population size by stocking brown trout fingerlings (200/mile). Since reproduction is currently limited, this will increase the number of brood stock and provide the predators needed to reduce the size of the white sucker population.

Spring Creek - Spring Creek is a small stream flowing through the middle of the sagebrush flats east of the Arapaho National Wildlife Refuge. Its greatest potential lies in using it as a water source for creating a series of waterfowl marshes. The known fish population consists of creek chubs. However, the potential for producing a trout fishery in a small reservoir does exist.

If a series of waterfowl marshes are proposed for Section 6, T. 7 N., R. 78 W., and section 31, T. 8 N., R. 78 W., the lowermost in the series should be used to create a trout fishery. The waterfowl marshes would serve as sediment traps to extend the life of the reservoir, and the reservoir could double as a brooding area for ducklings. However, the reservoir would have to be constructed to a depth adequate to prevent winter fish kill (12+ feet).

Government Creek - This creek is classified by the Colorado DOW as a brook trout stream. However, studies conducted by BLM biologists in 1976 failed to produce any fish. The present condition of the aquatic and riparian habitat is deteriorating due to excessive cattle grazing. Nine-tenths mile of the creek crosses public lands; the remainder of the headwaters lie within the Routt National Forest (2.0 miles) and the Colorado State Forest (2.4 miles).

The entire creek should be fenced to exclude cattle grazing except at designated watering points. The fence should be set back at least 50 feet on either side of the creek bank. Efforts should be made to get the Forest Service and the Colorado State Forest Department to cooperate in this fencing project to extend the fencing to the foot of the Medicine Bow Mountain Range.

North Sand Creek - North Sand Creek presently provides excellent brook trout habitat. However, a 1976 survey failed to produce any fish. The condition of the riparian habitat is currently classified as excellent.

Riparian and aquatic habitat should be watched closely during the FY 79 and FY 80 surveys to determine trends. If deterioration is noted, fencing may be necessary. Also, needs for installation of in-stream devices should be determined, and the beaver population should be closely watched. The beaver are currently quite beneficial to the stream ecosystem. However, this delicate balance could be upset in one year if a large litter of young beaver failed to leave the creek at weaning.

Wheeler Creek, Troutman Draw, Spring Creek, Threemile Creek, Republic Creek, Antelope Creek, Coon Creek - These creeks are very small in size and their management for improved fisheries is not feasible unless reservoirs are constructed to expand the existing habitat.

Lone Pine Creek, Shafer Creek, Sunday Creek - Except for the confluence of Shafer Creek with North Fork North Platte River, these creeks cross public lands for a short distance immediately adjacent to the Routt National Forest. These short stretches of stream should therefore be managed in conjunction with Forest Service management plans. In fact, these small parcels of land could be administered more efficiently if they were turned over to the Forest Service and removed from BLM jurisdiction.

Darling Creek, Little Grizzly Creek, Foran Creek, Michigan River, Illinois River, Jack Creek, Canadian River, Allen Creek, Pinkham Creek, Camp Creek - These creeks cross public lands for extremely short distances and most of these short stretches are inaccessible to the public. Therefore, no specific management techniques are recommended at this time.

Mexican Creek, Colorado Creek, Lost Creek, Soap Creek, Owl Creek - These creeks have presently not been fully studied. Surveys should be conducted to determine potential for management.

In summary, efforts should be made whenever possible to obtain additional stream access to all streams in the North Park Habitat Management Area. Also, all streams in the area should be managed to protect riparian habitat. This includes restricting cattle grazing whenever and wherever habitat deterioration is noted.

Lakes

There are eight lakes in the North Park Habitat Management Area (Table 7) which offer immediate potential for fisheries production and lie within or adjacent to public lands. Lake habitat surveys were completed in 1976 by BLM biologists. Additional work to assess the status of fish populations will be done as part of a cooperative agreement to be developed with the Colorado Division of Wildlife (DOW). The intent of this agreement would be to permit cooperative and coordinated efforts of the two agencies to develop the fishery potential of these waters. The analysis which follows is intended to summarize presently available information and to make management recommendations for the eight lakes.

Cowdrey Lake - This lake is currently managed by the DOW as a public fishing lake. Fifty-eight percent of the shoreline (1.3 miles) lies upon public lands, including most of the parking lot. This area is heavily used by fishermen during the summer months, and trash collection and littering has been a problem. The DOW should be encouraged to improve its trash collection system, and BLM assistance should be made available, if necessary, to clean up public lands.

The fish population should also be jointly sampled at least once every two years by DOW and BLM biologists. If BLM resources are needed to improve lake management, they should be made available to the DOW. Additionally, the small segment of the Michigan River (0.16 miles) crossing public lands adjacent to Cowdrey Lake should be well signed for public access. Attempts should also be made to obtain easements from private landowners to extend public access as far as possible on the Michigan River.

Lake John - This lake is currently managed by the DOW as a public fishing lake. Only 7% of the shoreline (0.64 miles) is on public lands. Present

TABLE 7

Lakes in the North Park Habitat Management Area which Lie Within or Adjacent to Public Lands and Hold Permanent Water Supplies Throughout the Year

	Surface Acres	Maximum Depth	Public Fishing Access	Fish Species Present	Fish Species Being Stocked	Reproducing Fish Species
Cowdrey Lake	80	20	Yes	R, L, WS	R	L
Lake John	563	21	Yes	R, L, B, WS	R	B,L
Walden Reservoir	674	15	Yes	R, B, WS	R,B	WS
Seymour Lake	35	15	Yes	R, WS	R	R
Hecla Reservoir	20	15	Yes	R, WS	None	WS
Sneed Reservoir	200	--	No	WS	None	WS
Boettcher Lake	175	15	No	WS	None	WS
MacFarlane Reservoir	400	--	Yes	WS	None	WS

management by the DOW is considered adequate,and BLM biologists should cooperate with DOW biologists whenever possible to improve lake management.

Walden Reservoir - This reservoir currently provides excellent duck, goose, and other water bird nesting habitat and is an important duck molting area. Sixty-nine percent of the shoreline (7.1 miles) is on public lands. A joint fish population survey should be conducted by DOW and BLM biologists. At this time, current uses should be evaluated and a management plan should be agreed upon by both agencies.

Seymour Lake - Seymour Lake is an irrigation reservoir managed jointly by the DOW and BLM for public fishing. Fourteen percent of the shoreline (9.24 mile) lies on public lands. Littering and trash collection have been problems at this lake, especially on public lands. A joint effort should be made by the DOW and BLM to improve this situation. Additionally, joint fish population sampling by the DOW and BLM biologists should be conducted annually to assess and improve management techniques. An effort should also be made to reduce drawdown and thus increase minimum pool level. A severe drawdown was made in 1976 and the survival of the fish population is currently questionable.

Hecla Reservoir - This is an irrigation reservoir located one mile south of Seymour Lake at the foot of Spicer Peak. Twenty-one percent of the shoreline (0.24 mile) lies adjacent to public lands. Public access to this lake is difficult, and the lake is affected by severe drawdowns for irrigation purposes. Unless greater water surface stability can be maintained through cooperative agreements with the ranchers, this lake offers little potential for fisheries management. It should, however, be stocked occasionally with rainbow trout.

Sneed Reservoir - This reservoir is currently controlled by the Big Horn Ranch. Public access is not permitted, and access for official government activity is given reluctantly. Fisheries potential is questionable but should be investigated by a joint DOW/BLM survey. Public access should be obtained as discussed in the North Fork North Platte River Management Plan. When public access is obtained, Sneed Reservoir should be given further study to design adequate management plans. Forty-four percent (1 mile) of the Sneed Reservoir shoreline is on public lands.

Boettcher Lake - Boettcher Lake is also controlled by the Big Horn Ranch,and public access is prohibited. Sixteen percent of the shoreline (0.36 miles) is on public lands, but there appears to be no feasible way of obtaining public access. Therefore, no management techniques are recommended for this lake. An effort should be made to sell this lake frontage to the Big Horn Ranch or to trade it to them for additional Sneed Reservoir frontage.

MacFarlane Reservoir - This reservoir is currently being utilized for irrigation purposes and as a brood rearing and molting area for ducks. Eighty-nine percent of the shoreline (4.52 miles) lies on public lands. A joint (BLM/DOW) fish population survey should be conducted on this reservoir to determine its present condition. Limnological parameters should also be determined at this time, especially depth profiles. Preliminary observations indicate that this reservoir holds significant potential as a public fishing lake, maximum depth being the critical limiting factor.

The major conflicts with utilization of this lake for public fishing are maximum depth, irrigation drawdown, and use of the area for duck molting. Maximum depth can be increased by dredging. At least 15 feet of depth is needed during the winter months to prevent winter-kill. Irrigation draw-down during the summer of 1976 was not as severe at MacFarlane Reservoir as it was at Seymour Lake. Public fishing could possibly be regulated to minimize interference with duck molting. Either the lake could be totally closed to fishing during the peak molting period or zoned so that fishing would be restricted to the low-use duck areas near the dam.

Some interest has been shown by the rancher who owns the MacFarlane Lake Dam to let BLM have or purchase public access rights to the dam and the road leading to it from Colorado Highway 125. This proposal should be pursued in FY 78. If accomplished, BLM would have legal public access to 95% of the lake and it would be easily accessible from a major public highway.

OBJECTIVES

1. Establish minimum stream flow requirements and lake and reservoir levels for the existing 35 miles of stream fisheries in the North Park P.U. in FY 1978.
2. Determine the existing stream fisheries (quality and quantity), riparian habitat condition, trends, and potential for 35 miles of streams on public lands in the North Park P.U. in FY 1978.
3. Establish the greenback cutthroat trout populations in suitable streams in the North Park P.U.
4. Improve bank cover and riparian habitat on Indian Creek, Government Creek, North Fork North Platte River, Goose Creek, and Beaver Creek.
5. Improve stream pool-riffle ratio and pool quality on all public lands.
6. Reduce stream silt composition to a maximum of 10 percent.
7. Increase bank classification to a minimum of 60% shrubs with a grass-sedge-forb understory.
8. Increase stream canopy cover to 40% on all public lands.
9. Provide public access to 175 miles of existing stream fisheries and 1,000 acres of existing and potential lake/reservoir fisheries.
10. Obtain water level information on all reservoir, lakes, and ponds capable of maintaining a fisheries program within the North Park P.U.
11. Provide new reservoir fisheries habitat in the North Park Planning Unit on perennial streams of low flow fisheries values.
12. Maintain the excellent riparian habitat on the North Platte River, South Fork Big Creek, and North Sand Creek.
13. Improve the fisheries habitat to realize the fisheries potential on Grizzly Creek.
14. Initiate a cooperative agreement with the DOW to assist them in conducting and managing all reservoirs and lakes that border public lands in the North Park P.U.
15. Maintain the following minimum stream standards of a B1 stream under the parameters established by the Colorado Department of Health.
16. Improve public awareness and increase utilization of stream and reservoir fisheries in the North Park P.U.

17. Develop and protect all perennial springs in the North Park P.U. (see overlay).

18. Create a fisheries reservoir on Spring Creek.

19. Obtain baseline data on invertebrate populations, abundance, and diversity in the North P.U. on streams on public lands that could be adversely impacted by future resource developments in the area in FY 1978.

20. Upon completion and evaluation of the baseline invertebrate study, establish an annual invertebrate collection on all public lands streams in the North Park P.U. that will be affected by future resource developments.

21. Provide for float trips which would cover 39.28 miles of the North Platte River.

22. Improve trash collection at the following lakes:

Cowdrey Lake
Walden Reservoir
Seymour Lake
Hecla Reservoir
MacFarlane Reservoir.

C. CONSTRAINTS

This activity plan is the result of the parameters of management set by the North Park Management Framework Plan of 1975, North Park MFP Update, September, 1977. This MFP is on file in the Kremmling Resource Area Office as a public document. In developing the North Park Wildlife Habitat Management Plan, constraints in managing wildlife were recognized in the MFP. Within each activity discussed are limitations placed on wildlife management by other resource considerations.

Implementation of any MFP decisions will require coordination with other activities in developing EAR and ES activity plans and/or stipulations. Coordination, therefore, will result on a site-by-site basis when specific proposed actions will be analyzed by all activities for mitigation of impacts. Documents written to date defining interdisciplinary stipulations on proposed actions are listed in Appendix 6. Refer to these documents and the North Park Management Framework Plan for objectives of management in each activity and the resource analysis rendered to date on implementation of MFP decisions.

Lands

Land activity decisions within the MFP that constrain wildlife management include:

1. Jackson County has two years to develop and begin implementation of a recreation plan for Walden Reservoir.
2. The Arapaho National Wildlife Refuge application for withdrawal of public lands (Case File C-12610) is contingent upon federal reimbursement to the grazing permittee for: (a) range improvements, (b) guaranteed use of water and forage, and (c) completion of an

environmental statement.

Minerals

Minerals activity decisions within the MFP that constrain wildlife management include:

1. Consider minerals the primary resource--limit all others.
2. Minerals exploration and development will occur on elk wintering range at a time not to interfere with elk use.
3. Open the following areas for coal development by leasing: T. 8, 9, 10 N., R. 78 and 79 W., and T. 6 and 7 N., R. 80 and 81 W. (See MFP Step 3 Overlay, Minerals Area 1.1).Updated 9/7/77 to read: T. 8, 9, 10 N., R. 78, 79 W. (part), and part of T. 6, 7 N., R. 80 and 81 W. (M1.1-M1.21).
4. Offer tracts identified in the McCallum Unit for coal leasing under EMARS by 1980.
5. Offer tracts in the Coalmont vicinity and McCallum Unit for consideration as demand increases and resource information on coal is acquired. (See MFP Step 3 Overlay, Minerals M-1
6. Allow Area M-4, MFP Step 3 Minerals Overlay, to remain open for mineral leasing (including oil and gas).
7. Keep Area M-5,MFP Step 3 Minerals Overlay, open for oil and gas leasing.
8. Keep Area M-7, MFP Step 3 Minerals Overlay, open for geothermal leasing.
9. Keep Area M-8, MFP Step 3 Mineral Overlay, open for mineral entry and locatable development.

10. Mitigate all resource impacts on a site-by-site basis during the ES process.

Livestock Management

Range activity decisions within the MFP that constrain wildlife management include:

1. Allow changes of classes of livestock or dual use to facilitate management.
2. Restrict wildlife populations where conflicts for forage occur on livestock ranges.
3. Do not use fire as a tool of management for conversion of vegetative types.
4. Implement vegetation manipulation where HMP and AMP documents are completed.
5. Meet most wildlife habitat management objectives through the grazing ES mitigation.

Soil and Watershed

There are no MFP soils and watershed decisions that contain wildlife habitat management.

Recreation

Recreation activity decisions within the MFP that constrain wildlife habitat management include:

1. Restrict ORV use to existing roads and trails in scenic corridors and designated roads on Independence Mountain; the remainder of the Planning Unit is unspecified, pending release of final ORV

regulations.

2. Legal access to McFarlane Reservoir will be acquired.
3. Mitigate archaeological sites where necessary impacts occur.

Forest Management

There are no MFP forestry management decisions that constrain wildlife habitat management.

D. Planned Actions

The plan prepared herein is designed to enhance existing wildlife habitat, create critical habitat components limiting priority species populations while maintaining habitats where potential has been realized.

As the plan is carried out, facilities will be constructed and management implemented to bring about defined objectives for each priority species. The implementation of this plan will compliment the natural environment and, in many cases, mitigate the environmental impacts heretofore experienced within the North Park HMP area. This proposed action fully recognizes the future potential impacts from the exploration and development of coal, oil, and gas resources within the basin. (See Umbrella EAR for Oil and Gas Leasing, December, 1975; also see Description of Existing Environment.) It consequently provides some safeguards from losing irreplaceable wildlife habitat components.

Nine inventories and studies have been designated for completion in the North Park HMP. These inventories and studies are essential components of the HMP and must be completed in order to obtain baseline data for future management decisions and implementation of habitat improvement or preservation practices. A detailed listing of these studies is located in the Management Evaluation and Revision section of this document.

Species Management

The Colorado Division of Wildlife (DOW) has proposed several wildlife introductions within the North Park Habitat Management Plan (HMP) area. The first, a moose introduction, has been designated for the southeast corner of the HMP area on Routt National Forest. The initial moose release was scheduled for winter of 1977. However, poor snow conditions negated trapping efforts in Utah, and an introduction stock was not obtained. The introduction has been rescheduled for winter, 1978.

Moose distribution, after establishment, is projected into one, five, ten, and twenty-year distribution areas by DOW. Public land comprises about 2.4% of the projected twenty-year distribution. A copy of the moose introduction proposal is available in the Kremmling Resource Area Office.

The DOW is also proposing two bighorn sheep introductions within the HMP area. Sheep Mountain (along the southern boundary of the HMP) is one of the proposed bighorn release sites, and the Red Canyon (along the western boundary) is also proposed as a release site. Public land on Sheep Mountain may provide winter habitat for bighorns released at Red Canyon. Formal proposals and introduction plans for the bighorn releases have not been formulated to date.

Sport harvest will continue to be used as a tool to accomplish big game and small game population objectives. According to the Colorado Division of Wildlife, conservative antelope and mule deer hunting seasons will continue as a method to control the rate of population growth of these species; either-sex elk seasons with specified numbers of permits will continue to control elk numbers. Small game seasons, grouse and waterfowl, will continue similar to the seasons of 1976 and 1977. Other species seasons such as coyotes, furbearers, etc., are also expected to continue similar to 1976-1977.

Habitat Management

The following is a composite of proposed projects designed to improve habitat for a variety of wildlife species. All planned actions and related projects are located on public land within the HMP area. Table 5 is a summary listing of priority projects. Each proposed project will require an environmental assessment record prior to any construction.

Planned Actions

Priority

1 Hebron Wells - Four 1,000-2,000 gallons-per-minute wells will be drilled and cased to provide water for waterfowl and shorebird habitat development in Hebron Slough. Water from the wells will be distributed to 22 potholes and reservoirs. A permanent water source will provide feeding, brooding, and nesting habitat on 3,000 acres of public land within the area. The well water will enhance aquatic and emergent vegetation growth. This vegetation will be utilized by waterfowl/shorebirds as food and cover. The project will be a cooperative effort between BLM and DOW.

Objectives served: WS-1, WS-2.

2 Hebron Slough Islands - Construction of 25 earthen islands will enhance waterfowl nesting in the Hebron Sloughs. The islands will be constructed with a bulldozer; mounds will be constructed using dirt material from within the pothole bottoms. The islands

should be approximately 0.1 acre in size and at least three vertical feet of island should extend above the high water line. The earthen islands will provide increased security and higher nesting success for waterfowl. Objectives served: WS-1, WS-2.

3 Hebron Water Division Structures - A series of canals, ditches, and dikes will be necessary to divert water to the impoundments within the Hebron Slough. Diversion gates will be installed in two existing ditches and nine natural drainages to direct water to impoundments. The number of structures necessary to distribute water will depend upon the location of the proposed wells. Objective served: WS-1.

4 Hebron Reservoirs - Five additional reservoirs are proposed for construction within the Hebron Slough area. These reservoirs will provide additional surface water and associated aquatic and emergent vegetation for waterfowl food and cover. Water level control structures will be installed on each reservoir to facilitate drainage. The reservoirs will approach 10 acres in size. Objectives served: WS-1, WS-2.

5 Hebron Reservoir Protective Fencing - Reservoirs 5, 21, 22, 23, and 24 will be fenced to restrict livestock use of the new reservoirs. The fencing will enhance establishment of soil stabilization and waterfowl brooding and nesting cover vegetation. Objective served: WS-1.

6 Sudduth Fence Modification - Approximately 15 miles of 32-inch woven wire fence with 2 to 3 strands of barbed wire above impedes normal antelope movement within GMU A8. Crossings are limited to

several small gullies washed under the fence. Increased mineral activity in the fence area has necessitated frequent antelope movement to avoid harassment. This project will correct the fence to current Bureau specifications that will facilitate safe movement. Mule deer will also benefit, as the proposed modification will also enhance safe crossing while moving to and from winter range. Objective served: A-1.

7 Spring Creek Reservoirs and Protective Fences - Three reservoirs, each approximately 10 acres in size, and one 30 acres in size, will be constructed on Spring Creek to provide waterfowl and sage grouse habitat. Each reservoir will contain a water-level control structure to facilitate drainage and fluctuation. The reservoirs will enhance wet meadow vegetation growth between reservoirs, as well as provide waterfowl nesting and loafing habitat. Each reservoir will be fenced to restrict livestock use of the reservoirs and adjacent vegetation. Livestock restriction will enhance development of soil stabilization and nesting and brooding cover for waterfowl and sage grouse. Objectives served: WS-3, WS-5.

8 Alkali Lake Islands and Pits - Five earthen islands approximately 0.1 acre in size will be constructed on Alkali Lake. The islands will be constructed from lake bottom soil. Areas of dirt removal will provide pits that will store water longer than the normal lake bottom. The chemical composition of Alkali Lake creates an ecosystem unique to Alkali Lake. This ecosystem may support specialized shorebirds dependent upon the chemical composition of Alkali Lake. The proposed islands and pits will improve habitat

by providing additional edge effect and shoreline for shorebirds. Objective served: WS-7.

9 Antelope Spring Protective Fence - Antelope Spring has a high potential for providing lush spring-side vegetation and high quality water. Livestock concentration at Antelope Spring has resulted in trampling and elimination of spring-side vegetation. The potential for sage grouse brooding cover and waterfowl nesting cover exists, with livestock control. Protective fencing from livestock use will allow vegetation to reestablish adjacent to the spring and creek. Objectives served: A-2, SG-4, NG-1.

10 Deer Creek Spring Development, Impoundments, and Protective Fencing - A semi-artesian well was located by mineral exploration in the Deer Creek drainage but has not been developed. The proposed project involves construction of two water impoundments, each with a water level control structure, and the reconstruction of an existing impoundment. One structure will impound the spring and release water via the level control structure. The reservoirs will provide habitat for waterfowl and sage grouse. Wet meadow vegetative complexes will result from water retention and restricted livestock grazing. A pipeline and water tank from the spring impoundment will provide livestock water to an allotment northwest of the proposed development. Objectives served: A-2, SG-4, WS-4, and WS-6.

11 Deer Creek Reservoir Seedings - Project involves seeding the above structures with a grass-forb mixture that will provide soil stabilization as well as nesting and brooding cover for waterfowl

and sage grouse.

12 Walden Reservoir Protective Fence - Project will consist of construction of 2.5 miles of fence to restrict livestock use of shoreline vegetation. Waterfowl and shorebird nesting cover and brooding is in poor condition due to livestock grazing along the north and west shores of Walden Reservoir. Restricted livestock use will allow shoreline vegetation to reestablish, and invertebrate fauna associated with the vegetation will provide a high protein food source for waterfowl broods. Nesting cover vegetation will be planted along the shoreline. Objectives served: WS-6, SG-4.

13 Hebron Slough Fence Modification - Approximately 3 miles of barbed wire fence will be modified to Bureau 1737 standards. The existing fences were not designed to facilitate antelope and mule deer movement throughout the slough area. Objectives served: A-2, MD-4.

14 MacFarlane Reservoir Protective Fence and Seeding - This project involves construction of approximately 4.25 miles of fence around MacFarlane Reservoir to restrict livestock grazing. Grazing restrictions will enhance reestablishment of shoreline vegetation that will be used as waterfowl and shorebird nesting cover. Nesting cover vegetation will be planted along the shoreline. Objective served: WS-5.

15, 16, 17 Green Ridge, Owl Mountain, and Buffalo Peak Patchcuts and Seedings - Projects will involve ten 20-acre patchcuts in lodgepole pine timber type. The cuts will be spaced one-quarter mile apart; a quarter mile of timber buffer will remain undisturbed between each patchcut. Roads and trails constructed to facilitate cutting will be closed and seeded. The patchcuts will also be seeded with mixtures beneficial to deer, elk, and blue grouse. Objectives served: MD-5, E-1, and BG-1.

18 Lee Draw Pipeline and Tanks - Two water holding tanks and 1.5 mile of pipeline will be constructed to provide two additional waters for antelope. Water in this area is limited to several stock tanks adjacent to heavily traveled roads. The pipeline and tanks will extend from Holsinger Well No. 2 and will provide water in secluded areas. The waters will be available to livestock as necessary and will facilitate more favorable antelope and livestock distribution.

19 Antelope Well #1 Pipeline and Tank - One mile of pipeline and one water tank will provide an additional water for antelope and sage grouse. The existing well and tank are located adjacent to a heavily traveled county road, and antelope use is minimal. The proposed pipeline and tank will provide additional water one-half mile away from the county road. Objective served: A-2, NG-1.

20 Case Spring Wet Meadow Fence, Pipeline, Stock Tank - One mile of fence is proposed to restrict livestock grazing within the wet meadow vegetative complex surrounding Case Spring. The increase in vegetation will provide sage grouse brooding habitat and high quality water for antelope and other wildlife species. The proposed stock tank and pipeline will provide livestock water outside the protective fence. Objectives served: SG-4, A-2, NG-1.

21 Case Meadow Expansion Dike - The proposed dike will be constructed across a drainage intersecting Case Spring. The dike will retain water and provide an aquatic base for establishment of meadow vegetation. Objectives served: SG-4, NG-1, A-2.

22 Sage Grouse Strutting Grounds Road Closure, Interpretive Signs - Two roads to each of the strutting grounds at Boettcher Junction and Alkali Lake will be closed to vehicle traffic during sage grouse strutting season. The two strutting grounds have been subjected to extremely heavy people pressure that has disrupted sage grouse strutting activities. Objective served: SG-3.

23 Green Spring Protective Fence, Pipeline, and Tank - One-half mile of protective fence will be constructed to restrict livestock use of springside vegetation and adjacent wet meadow habitat. Livestock water will be provided by the pipeline and tank outside the protective fence. Antelope, sage grouse, and a variety of non-game species will benefit from the project. Objectives served: SG-4, A-2.

24 Peterson Ridge Pipeline and Tank - This project will provide one additional antelope water on Peterson Ridge. Water is presently limited to one livestock water facility near the west end of Peterson Ridge. The proposed project will enhance summer antelope distribution. The additional water will originate from an existing windmill and tank. The new water will be available for livestock use as necessary. Objective served: A-2.

25 California 17 Spring, Wet Meadow Fence, Pipeline, and Stock Tank - An existing spring development is providing running water through a

wet meadow complex and finally into a gully. Vegetation associated with the wet meadow complex can be enhanced through protective fencing. Livestock water will be provided by a pipeline and tank outside the fence. The proposal will result in high quality sage grouse brooding habitat and succulent summer forage for antelope. Objectives served: A-2, SG-4.

26 California Reservoir Protective Fence - Wet meadow vegetation improvement will result from protective fencing to restrict livestock grazing. The ultimate result of the project will be an increase in the water table level and an increase in variety and vigor of associated vegetation. Sage grouse, antelope, and non-game wildlife will benefit from the proposed project. Livestock water will be provided outside the fence if necessary. Objectives served: A-2, SG-4.

27 Grizzly Pond Protective Fence - Project consists of construction of 0.5 mile of fence to restrict livestock grazing of riparian vegetation. Restricted grazing will assure nesting and brooding cover for blue grouse and waterfowl, as well as high quality water for mule deer and elk. Objectives served: MD-4, WS-5, BG-1.

28 Fish Hatchery Fence Modification - Approximately 1.5 miles of woven wire fence will be replaced by a four-strand (Bureau 1737) fence that will facilitate antelope and mule deer crossing. Objectives served: A-2, MD-4.

29 California Gulch Retention Reservoir Repair - This reservoir was built to control erosion on California Gulch. The structure washed out sometime in the past and is no longer functional.

Repair and redesign of this structure would retard further erosion and eventually assist revegetation and stabilization. Objectives served: SG-1, A-2.

30 California 6 Reservoir Protective Fence, Pipeline, Stock Tank - This project will enhance wet meadow habitat by restricting livestock use of the reservoir and adjacent meadow habitat. Livestock water will be provided outside the fence by a catchment within the reservoir and a pipeline and tank outside the fence. Objectives served: SG-4, A-2.

31 A8 Fence Modification - Many miles of fence in Game Management Unit A8 do not meet current Bureau Manual 1737 specifications. These existing fences are making safe movement of antelope and mule deer difficult. All fences not meeting Manual 1737 specifications will eventually be corrected to those specifications.

32 Damfino Reservoirs 1 and 2 Protective Fence - Same rationale as Walden Reservoir Protective Fence. Objectives served: A-2, MD-4.

33 Walden Reservoir Goose Nesting Platforms - Rationale same as MacFarlane Reservoir (see 34, below). Objective served: WS-2.

34 MacFarlane Reservoir Goose Nesting Platforms - Attempts are currently underway in North Park to establish a resident nesting population of Canada geese. Artificial nesting structures have been erected by the Division of Wildlife and Arapaho National Wildlife Refuge to entice Canada geese to nest. Floating structures are currently used more, and with greater success, by nesting geese than are the shoreline platform type. Objective served: WS-2.

35 Damfino Reservoirs Goose Nesting Platforms - Rationale is the same as for MacFarlane Reservoir (34, above). Objective served: WS-2.

36 Battlement Road Rehabilitation - Rationale is the same as the North McCallum Road Rehabilitation (priority 37, below). Objectives served: A-1, MD-3, SG-1.

37 North McCallum Road Rehabilitation - Approximately five miles of mineral exploration, transportation, and maintenance roads will be closed and revegetated. These roads and trails are no longer necessary for management purposes and can be returned to a natural state through closure to vehicular traffic and reseeding with native vegetation. Objectives served: A-1, SG-1, MD-3.

38 North Platte Fence Modification - One mile of woven wire fence will be replaced to facilitate safe antelope and mule deer crossing. This fence is located on important deer winter range, as well as antelope range. The woven wire fence is no longer necessary, as domestic sheep do not graze the allotment containing the fence. The woven wire will be replaced by a Bureau 1737 specification fence. Objectives served: A-1, MD-4.

39 Boat Ramps on North Platte River - Provide for float trips which would cover 39.28 miles of the North Platte River. Public lands can best be used to provide access points for float/fishing trips on the North Platte. The 10 segments of public lands are strategically located (see base map) and could eventually provide for float trips which would cover 29.28 miles (85%) of the river. This project should include boat slides or ramps at each access

point (see Table 4). Minimum flow requirements will be needed to maintain float trips. An extensive public relations program will be needed to alleviate problems between recreationists and ranchers. Objectives served: F-9, F-21.

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TABLE 4
HABITAT MANAGEMENT PLAN PROGRESS REPORT

OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
A-1 Improve habitat in Game Management Unit A-8 to support a breeding population of 150 antelope with a harvestable surplus of 40 per year.		A-1a Modify 15 miles of woven wire fence currently restricting antelope movement within GMU A-18. See Project 6, Map 7.		A-1a Aerial recon. to observe antelope distribution within the project area. DOW during yearly population and classification flights.	
		A-1b Modify 5 miles of barbed wire fence to conform to Manual 1737 requirements. Project 31, Map 7.		A-1b Same as A-1a.	
		A-1c Prohibit future fencing, canals, roads, in GMU A-18 that would restrict antelope movement. Map 3.		A-1c Compliance checks.	
		A-1d Close and revegetate, with a grass-forb-shrub mixture desirable to antelope, five miles of seismograph roads and trails in the Battlement and North McCallum oil fields. See Projects 36,37. Map 7.		A-1d Permanent photo points to determine success of seedings; taken biannually.	

INSTRUCTIONS

1. List specific objectives as developed in MFP or as otherwise approved.
2. List specific planned actions to be initiated to meet each specific objective.
3. List scheduled studies and evaluations planned in evaluating accomplishments.
4. Enter date that each objective, action, or evaluation is accomplished.

UNITED STATES
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TABLE 4

HABITAT MANAGEMENT PLAN PROGRESS REPORT

OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
		A-1e Coordinate with range program to provide 3 new waters in Lee Draw. Waters will be available to livestock as well as antelope. See Project 18. Map 7.		A-1e Aerial, occular recon to determine antelope distribution and use of new waters.	
		A-1f Protect identified winter concentration areas and inventory to identify kidding grounds and additional winter concentration areas. Establish one-half mile no disturbance buffer around winter concentration areas and kidding grounds. Map 3.		A-1f (1) Success of new locations. (2) Compliance check, EAR review and input.	
A-2 Increase antelope numbers by 50 in each Game Management Unit in Units A-6, A-7, and A-9 to achieve a breeding population of 600 in these units by 1993.		A-2a Provide the following vegetative composition on antelope ranges: (1) Winter: 30% grass, 45% forbs, 25% shrubs. (2) Summer: 35% grass, 45% forbs, 20% shrubs. The above compositions will		A-2a One hundred point composition transects; and one permanent photo point per transect. One transect per 1,000 acres winter range, one transect per 3,000 acres summer range. Transects can be combined	

INSTRUCTIONS

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TABLE 4
HABITAT MANAGEMENT PLAN PROGRESS REPORT

OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
		be achieved through livestock management systems.		with sage grouse evaluation and should be read tri-annually. DOW-BLM.	
		A-2b Improve water quality on 10 springs by protective fencing. Projects 7b, 9, 10, 20, 21a, 23, 25, 29, 26, and 25. Map 7.		A-2b Water quality tests before and after fence construction to be conducted by BLM hydrologist.	
		A-2c Create 3 additional waters for antelope. See Projects 18, 19, and 24. These projects should be coordinated with the range program as livestock should also benefit. Map 7.		A-2c Ground recon to determine antelope use of waters. BLM-DOW. Bi-annually during summer months.	
		A-2d Modify 2.5 miles of woven wire fence to facilitate safe crossing for antelope. See Projects 28, 38. Map 7.		A-2d Aerial ground recon to determine change in antelope distribution. BLM-DOW.	
		A-2e Modify all fences not conforming to Manual 1737 requirements. See Projects 13 and 31. Map 7.		A-2e Same as A-2d.	

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UNITED STATES
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TABLE 4

HABITAT MANAGEMENT PLAN PROGRESS REPORT

OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
A-3 Determine vegetative composition, condition and trend of 135,000 acres of public land antelope habitat by 1983.		A-3a Stand composition transect: one 100-point transect per 3,000 acres of antelope habitat; 2 permanent photo points along each transect line. Transects and photos taken tri-annually beginning in summer 1978. See Map 3 for transect locations (same studies will benefit sage grouse, mule deer).		A-3a Compilation of data and results. BLM-DOW.	
		A-3b Four Parker Three Step Transects and associated photographs will be relocated, taken, and compared to results and photos taken in 1968. Results and photos on file in Kremmling Resource Area Office.		A-3b Comparison of results. BLM.	
A-4 Determine extent of interstate antelope migration to and from Wyoming and		A-4 Cooperative trapping, tagging studies between BLM (Craig, Rawlins), DOW, and Wyoming Game & Fish.		A-4 Compilation of data and results. BLM - Craig and Rawlins, DOW, and Wyoming Game & Fish.	

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
effects of movement on North Park herd size and: (a) List limiting factors to herd on Colorado and Wyoming side. (b) Implement results where limiting factors can be reduced or eliminated.					

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
SG-1 Improve 130,000 acres of sage grouse habitat by providing an average vegetative composition of 40% grass, 40% forb, and 20% shrub.		SG-1a Implementation of livestock management systems.		SG-1a Composition transects: one 100 point transect per 1,000 acres of sagebrush habitat; beginning in summer of 1978 and to be continued tri-annually until 1990.	
		SG-1b Protection against sagebrush eradication by right-of-way, range improvement, mineral development, exploration permit stipulations.		SG-1b Compliance checks by BLM.	
SG-2 Maintain 21,000 acres of sage grouse winter concentration areas in present condition.		SG-2 Prohibit surface disturbance within ½ mile of winter concentration areas. through right-of-way, mineral exploration, vegetation manipulation stipulations. Control of ORV use. Map 5		SG-2 Winter area census by Division of Wildlife.	

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
SG-3 Maintain 30 sage grouse strutting grounds active in 1977 and all new grounds located thereafter in existing conditions.		SG-3a Prohibit surface disturbance within ½ mile of strutting grounds. Map 5		None	
		SG-3b Close roads to vehicular traffic within ¼ mile of strutting grounds from March 15 thru May 15. Map 5			
		SG-3c Construct sage grouse viewing blinds on strutting grounds for public controlled use. Cooperate with DOW on ground selection. Controlled use on others Map 7			
SG-4 Improve 300 acres of sage grouse brooding habitat		SG-4a Protective fencing for livestock management. See projects 9, 12, 13, 7b, 14, 19, 20, 29, 21a, 25, 30 Map 7		SG-4a Photo points to be taken every two years. Brood counts within meadows.	
		SG-4b Burn vegetation on suitable sites adjacent to		SG-4b Photo points to be taken every two years.	

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		wet meadows. See project 20, 21a Map 7		Brood counts within meadows	
		SG-4c Raise water table level by gully control. See project 21. Map 7		SG-4c Photo points to be taken every two years. Brood counts with meadows.	
SG-5 Identify additional sage grouse brooding areas, winter concentration areas and strutting grounds on 130,000 acres of sage grouse habitat.		SG-5 DOW contract - extension of North Park sage grouse study.		SG-5 Report on new areas.	

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
E-1 Improve 70,000 acres of public land elk habitat in GMU's 6, 17, and 161 to support 1,000 elk by 1983 by providing the following habitat type compositions: (a) Cover and Food Winter: 40% cover--aspen, lodgepole 60% open-mountain shrub-big sagebrush. Summer: 60% cover--lodgepole pine, aspen, spruce, fir 40% open--mountain meadow-mountain shrub.		E-1a Patch cut dense, stagnated lodgepole pine stands on Independence Mountain, Green Ridge, Buffalo Peak, and Owl Mountain to provide edge effect. (See projects 15,16,17.) Map 7 E-1b See patch cuts with a grass-forb-shrub combination suitable for elk food. (See projects 15, 16, 17.) Map 7 E-1c Coordinate with KRA and USFS timber harvest programs to assure elk habitat consideration in all logging-related activities-stipulations.		E-1a and E-1b Establish permament pellet group count transects and photo points in each unit to be counted and photographed in September of each year following project implementation--BLM. E-1c Aerial observation of each timber sale area before and after harvest activities to determine change in the elk use of harvest area: compliance checks. BLM-DOW.	
E-2 Determine the vegetative composition, condition		E-2a Stand composition transect--one 100 point		E-2a and E-2b Analysis of transects. BLM,DOW,USFS.	

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
and trend of 35,700 acres of elk winter range in GMU's 6, 17, and 161 by 1983.		transect per 2,000 acres of winter range; two permanent photo points on each line; transects and photos will be taken at 3-year intervals beginning in summer, 1978. Map 3			
		E-2b Browse age, form class and composition transects will be established and read along with stand composition and pellet group counts. Map 3			
		E-2c Soil analysis, topographical characteristics to determine suitability for mechanical/chemical manipulations. Map 3		E-2c Results of soil analysis.	
E-3 Locate elk calving grounds on 15,000 acres of public land summer habitat in GMU's 17 and 161 by 1993.		E-3a Identify habitat type preferred by elk for calving and protect from physical disturbance (timber harvest, rights-of-way, mining-exploration) within one-half mile. Inventory by aerial recon-		E-3a Success of calving ground location, BLM-DOW	

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		naissance, from May 15 to June 15 yearly until 1983. Map 3			
E-4 Determine the intensity of elk movement from summer range in GMU 17 to winter range in GMU 18 by 1983.		E-4a Cooperate USFS-DOW-BLM trapping and banding program during winter in GMU 18.		E-4a and E-4b Success of locating banded elk. BLM-DOW-USFS; results of program.	
		E-4b Aerial census in GMU 17 and 18 for location of banded elk.			
E-5 Improve 16,000 acres of public land elk winter range in GMU's 161 and 17 by reserving; (a) 50% of current annual growth of browse and (b) 50% of yearly grass production.		E-5 AMP's on Owl Mountain, Boettcher Ridge, Fischer Draw (see Map 3 for locations)		E-5 Composition, production and utilization transects, at end of the grazing season, beginning with AMP and conducted triannually thereafter.	
E-6 Increase elk hunter success from an average of 12% to 20% within the HMP area by 1993, legal access to 7,000 acres of public land by 1993.		E-6 Provide legal access to 7,000 acres of public land. Easements and right-of-way acquisition to: (a) Owl Mountain (b) Boettcher Ridge (c) Green Ridge		E-6 Increase in success as reported yearly in big game harvest statistics-DOW	

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		(d) North Sand Hills. (See Map.)			

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
MD-1 Determine vegetative composition, condition and trend of 60,500 acres of public lands winter range by 1983.		MD-1a Stand composition transect - one 100 point transect per 1,000 acres of winter range. Two permanent photo points along transect line. Transects and photos taken at 3 year intervals beginning in the summer of 1978. Map 4 MD-1b Four Parker Three Step Transects will be relocated, taken and photos compared to the same transect results and photos last taken and read in 1968 MD-1c Age, form, class transects will be established and read where bitterbrush is available in sufficient quantity to be considered key winter food.		Analysis of transects - BL, DOW, USFS.	

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
		MD-1d Permanent pellet group counts will be established along 100 point stand composition transects to determine deer days use per acre on winter range. Map 4			
MD-2 Maintain 40,000 acres of deer winter range in existing condition in GMU's 6, 17 and 161 until results of the North Park Range Fertilization are evaluated.		MD-2a Restrictions/ Stipulations on ROW's, easements, mineral exploration and development, livestock grazing improvements that will preserve the existing sagebrush vegetative complex.		Md-2a EAR review, compliance checks.	
		MD-2b Continue annual forage production measurements on North Park Range Fertilization Project for the next four years to determine success of fertilization. See map 4.		MD-2b Herbage capacitance meter readings annually at end of growing season, pellet group counts DOW-BLM.	

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MD-3 Increase deer numbers by 250 in each of Game Management Units 6,16,17,161 to attain an annual breeding population of 3,000 by 1993.		MD-3a Restricting hunting seasons, males only harvest.		MD-3a DOW winter aerial census.	
		MD-3b Livestock management systems to reduce deer-livestock conflicts.			
		MD-3c Protection of winter range as described in MD-2.			
		MD-3d Restrictive ORV use winter ranges.			
MD-4 Improve 27,000 acres of mule deer summer range by providing a 60% cover (aspen, lodgepole, spruce, fir) and 40% open (mountain shrub) habitat composition by 1983.		MD-4a See E-1a, 1b, 1c; Projects 15,16,17. See Map 7.		MD-4a, See E-1a,1b,1c.	
		MD-4b Control burn areas to 40 acres in size on Independence Mtn., Green Ridge, Buffalo Peak, and Owl Mtn.		MD-4b Establish pellet group counts, permanent photo points to monitor deer use and vegetative succession after fire. BLM.	
		MD-4c Stipulations on and direct input into timber management plans		MD-4c EAR, management plan review, compliance checks.	

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
MD-5 Improve 7,300 acres of fall-spring range in GMU's 6, 17 and 161 by reserving 25% of current annual browse growth and 50% of annual forb production for mule deer.		MD-5a Livestock grazing systems on Fischer Draw, Owl Ridge and North Sand Hills, See Map 4 MD-5b Control of ORV use on North Sand Hills to prevent loss of browse plants.		MD-5a Composition transects, browse age, form class transects - BLM-DOW.	

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
NG-1 Minimize losses of small birds and mammals in stock tanks.		NG-1a Installation of bird ramps in all stock tanks on public lands.		NG-1a Ocular reconnaissance to determine small bird and mammal mortality in stock tanks. BLM as necessary.	
		NG-1b Provide ground water basins adjacent to stock tanks in accordance with Technical Note 298.		MG-1b Ocular reconnaissance to determine actual use of basins.	
NG-2 Determine habitat and population status of amphibians and reptiles within the HMP area by 1993.		NG-2 Contract study with DOW		NG-2 Results of study.	
NG-3 Determine Population status of coyotes and their impact on the North Park Wildlife habitat area ecosystem by 1993.		NG-3a Food Habit studies in cooperation with DOW, USFS, CSU to determine prey species.		NG-3 Results of studies. census, coordination BLM-DOW.	
		NG-3b Aerial census in conjunction with big game counts.			

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		NG-3c Coordination with trappers, varmint callers to determine areas of high population densities.			
NG-4 Maintain aspen-lodgepole pine habitat type for 20 species of forest nesting raptors and songbirds on 27,000 acres of public lands within the HMP		NG-4a Timber harvest stipulations (1) Provide no disturbance buffer with ¼ mile of active nests; or as necessary according to specific requirements. (3) Preservation of waterholes in a natural state unless improvement is needed.		NG-4a (1) Review of all proposed actions, projects within the described area. (2) Compliance checks.	
		NG-4b Mining, right-of way, mineral exploration stipulations (1) Same as NG-4a(1) above			
NG-5 Provide 90% vegetative ground cover along 32 miles of perennial streams on public lands to support 80 species of		NG-5 Implementation of livestock management systems fencing.		NG-5 Vegetative composition transects; 100 point, photo points: conducted prior to implementation and tri-	

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songbirds and 30 species of mammals as listed in the North Park URA.				annually thereafter.	

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
TE-1 Determine the habitat and population status of the black-footed ferret and peregrine falcon within the HMP area by 1980.		TE-1 Contract studies with DOW, USFS, and USFWS		TE-1 Analysis of results	
TE-2 Determine greater sandhill crane limiting factors on 6,000 acres of scattered tracts of public lands in the southwest corner of HMP area by 1980. Preserve the existing habitat character until study is completed, and apply results.		TE-2a Cooperative study with DOW, USFS. TE-2b Projects as listed for waterfowl, shorebirds		TE-2 Completion and analysis of study.	
TE-3 Maintain the existing habitat composition (60% sagebrush, 40% aspen-conifer, adjacent to 3 miles of sheer cliffs, rock		TE-3a Protect habitat from alteration resulting from mineral development, exploration, rights-of-way, livestock grazing improvement. See Map 6.		TE-3a Success of introduction, evaluation of project proposals within 1 mile of Sheep Mtn. and compliance checks.	

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FB-1 Provide the necessary terrestrial and water-associated habitats to maintain the existing populations as found of those mammals classified as furbearers and recognized by DOW as such through trapping or hunting regulations. Allow no alternation of such habitat without fully knowing the losses to these species.		FB-1 Inventory habitat, populations and distributions of each species. Allow no conversion of habitats until the study is completed. Map 4		FB-1 Trapping records and samples.	

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S-1 Protect all identified raptor nesting sites and adjacent habitat. Locate, and protect all newly identified raptor nest sites and adjacent habitat.		S-1 (a) Provide a ½ mile no disturbance buffer zone around each nest site. (1) Stipulations related to any proposed surface disturbance including mineral exploration/development, right-of-way, etc.		S-1 (a) Review of proposals, ERA's, and compliance checks.	
		(b) Inventory to locate new nest sites, See Study		(b) Sources of nest sites location	

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
M-1 Determine the effects of moose on 3,800 acres of public lands within the projected distribution area if the proposed transplant is deemed successful (see Colorado DOW Moose Re-introduction on file in Kremmling Resource Area Office). Provide necessary habitat components as defined in the plan upon public land. Maintain or improve conditions as required.		M-1 Cooperate with DOW, USFS to determine use of public lands by moose by: (1) ocular reconnaissance (2) Use or radio transmitter tracking equipment. (3) photo points to determine effects on vegetation. See project Map 6		M-1 Results of observations, photo point	

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BG-1 Provide Habitat requirements to sustain an average of 20 blue grouse per square mile on 27,000 acres of aspen-conifer-mountain meadow-riparian habitat type as shown on map.		BG-1a Stipulations on timber harvest: (1) Prohibit logging within 100 yards of available water, creeks, springs, seeps. (2) revegetate logging roads with grass-forb-shrub mixtures suitable for grouse food and cover. Projects 22, 23, 24 (3) Avoid road construction through meadows, riparian habitat.		BG-1a Brood counts within timber harvest areas-BLM, DOW as needed. Compliance checks - BLM EAR review, field - BLM	
		BG-1b Stipulations on rights-of-way, mineral exploration, development that will protect the habitat complex mentioned in Objective BG-1.		BG-1b Compliance checks, EAR review, field - BLM.	
		BG-1c Cooperate with DOW to extend current blue grouse study to public lands within HMP area.		BG-1c Results of study.	

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
BS-1 Determine suitability of 3,800 acres of public land on Sheep Mountain as bighorn sheep winter range by 1980.		BS-1 Cooperate with DOW and USFS to: (a) Evaluate the habitat to establish the presence of winter food and cover requirements prior to EAR. 1. Vegetative composition, condition and trend transects. 2. Age, form class transects on key browse species. 3. Pellet group count to determine deer days use per acre. Map 6		BS-1 (a) and (b) Results of analysis, transects BLM-DOW-USFS prior to proposed EAR.	

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WS-1 Improve 3,000 acres of nesting, brood rearing, and resting habitat in the Hebron Sloughs Project area for waterfowl and shore birds by 1990. Production increases per year by 1990 include: a. 1,000 ducks b. 50 geese c. variable shore birds.		WS-1a Flood 260 acres of surface waters not to exceed 2.5 feet deep throughout June, July, August and September by construction of ditches, canals, and diversions (see projects 1, 3 and 4). Map 7		WS-1a Install permanent water measuring poles within ponds. Read monthly during season and as long as necessary to maintain depth of minimum pool thereafter.	
		WS-1b Provide high quality water of sufficient amounts for the above periods and for minimum pool requirement (see Project 1 for providing well water). Map 7		WS-1b Test well water initially and thereafter as necessary	
		WS-1c Regulate grazing of domestic livestock to eliminate trampling and consumption of edge, emergent and submerged vegetation of existing or established ponds. Fall use is the preferred season.		WS-1c Establish photo trend transects for upland sites. Establish 70mm aerial color IR transects for the ponds. Run every other year.	
		WS-1d Construct 5 new reservoirs for impoundment,		WS-1d Success of construction.	

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HABITAT MANAGEMENT PLAN PROGRESS REPORT

OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
		gully stabilization, and wet meadow enhancement (see projects 4 and 5). Map 7			
		WS-1e Construct 25 islands in existing and new reservoirs within the Hebron Slough area (Project 2), Map 7		WS-1e Use of islands by waterfowl, shore birds.	
		WS-1f Protect from all mineral surface occupancy for exploration or development.		WS-1f None.	
WS-2 Maintain the Hebron Sloughs area as a discrete ecological unit for all wildlife species, with priority given to aquatic flora and fauna where efficiency of surface and subsurface water use has to be tightly regimented.		WS-2a Trade, buy, or otherwise acquire 1,300 acres of intermediate slough area between Parts A and B of the Hebron Sloughs Project area. Map 1		WS-2a Success of acquisition.	
		WS-2b Design ditches and canals for achieving the greatest edge effect, to service an optimum number		WS-1b Success of water direction to impoundments.	

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		of ponds during critical demands periods (see proposed acquisition area and canal-pond network (Project 3). Map 7			
WS-3 Improve favorable aquatic and edge habitat over 800 acres within the P. U. other than Hebron Sloughs to support 10 nesting pairs of Canadian geese with an average brood success of 6 per pair by 1990.		WS-3a Construct 6 mounds (1 per impoundment) within the Spring Creek and Deer Creek reservoirs. Map 7		WS-3a Visually check conditions of islands as to erosion and vegetation on edges.	
		WS-3b Fence reservoir fills and impoundments with a buffer of at least 500 feet. Pipe off stock water to tanks. See Projects 9,7b,12,14 Map 7		WS-3b Check for maintenance needs or modifications after installation.	
		WS-3c Install goose nesting platforms not be less than one-quarter mile apart on any given body of water. (Projects 33, 34, and 35) Map 7		WS-3c Check for maintenance needs.	
		WS-3d Plant the most favorable cover and forage species within the goose		WS-3d Establish 35 or 70 mm aerial color IR transects as appropriate.	

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
		habitat areas and provide for vigor, seed production, and/or reproduction of same. Map 7			
		WS-3e Control grazing of livestock to eliminate trampling and consumption of edge vegetation near and within existing and established ponds (see Projects 9, 14, 12, 32, 7b, and 11). Map 7		WS-3e See WS-3d above	
WS-4 Determine condition and trend of waterfowl and shore bird habitat along 35 miles of perennial stream on public land by 1985.		WS-4a Riparian habitat study. See Management evaluation.		WS-4a Results of study.	
		WS-4b If riparian study deems necessary, protective fence habitat where livestock are degrading nesting and brooding cover.		WS-4b Check for maintenance or modification as necessary	
WS-5 Improve nesting and brooding cover on Spring Creek to support 10 pairs		WS-5a Provide three new reservoirs and wet meadow complexes on Spring Creek		WS-5a Establish permanent gully erosion transects.	

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of nesting ducks and 10 pairs of shore birds by 1985.		(1) soils and engineering studies for site selections, Map 7			
		WS-5b File on waters with State Water Board.			
		WS-5c See objectives and planned actions for WS-3d and WS-3e.		Ws-5c See evaluations WS-3d and WS-3c.	
		WS-5d Implement Projects 7a and 7b.			
WS-6 Improve waterfowl and shore bird nesting and brooding habitat on 13 livestock water and watershed impoundments by 1985.		WS-6a Program fencing to encompass existing reservoirs immediately (see Projects 12, 4, 2, 14, 29, 30, 32 Map 7		WS-6a AWP approval and progress reported.	
		WS-6b Design and program all new impoundments to be enclosed by fencing (Projects 5, 9, 12, 7b and 11). Map 7		WS-6b AWP approval and progress reported	
		WS-6c Manage livestock to		WS-6c Establish one photo-	

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		provide the optimum habitat withint the enclosures.		transect per enclosure. Evaluate every other year.	
		WS-6d Buffer shoreline by at least 500 feet from all		WS-6d Project plan approval.	
		WS-6e Obtain Boettcher Lake through exchange/ purchase. Map 1		WS-6e Success of acquisition.	
WS-7 Improve three miles of shore bird, duck and goose habitat along the north and east shores of Walden Reservoir. Create and maintain a nesting and brooding habitat.		WS-7a Buffer shoreline of public land by 500 feet by fencing (Project 7)		WS-7a Establishment vegetation--permanent photo points.	
		WS-7b Plant necessary cover and food emergent and submerged species as necessary (Project 7)		WS-7b Success of seeding-permanent photo points.	
		WS-7c Place goose nesting platforms as necessary at a density of one-fourth mile buffer radius. Project 33, Map 7		WS-7c Use of platforms by geese.	
		WS-7d Coordinate with State/County Watermaster		WS-7d None.	

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
		the design of all projects through proper design and placement in relation to high and low water line and rate of shoreline retreat. (Project 12). Map 7			
WS-8 Improve 200 acres of seasonally flooded-basin habitat at Alkali Lake to enhance shore bird and waterfowl production by 1983.		WS-8a Construct five earthen islands and pits in Alkali Lake to add edge and provide additional water-holding ability during dry years. These should be located in, or adjacent to, deepest sections of the lake. (Project 8.) Map 7		Ws-8a Census to determine increase in waterfowl/ shore bird use.	
		WS-8b Cooperate with DOW and CSU to initiate a study to determine if Alkali Lake, because of its chemical composition, supports shore birds unique to the lake's habitat type.		WS-8b Success of Study.	

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
1) Establish minimum stream flow requirements for the existing 35 miles of stream fisheries in the North Park P.U. in fiscal year 1978.		1) Minimum stream flows can be established by utilizing the Colorado DOW sag-tape method. a) This study can be contracted through a coop agreement with the Colo. DOW or hiring two 6 month temporary fisheries biologists. Due to the high priority factor involved, I feel a coop contract with the DOW is best. 2: Acquisition of water rights to maintain minimum stream flows and pools to support the fisheries.		Final Report	

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
2) Determine the existing stream fisheries (quality and quanity), riparian habitat condition, trends and potential for 35 miles of streams on P.L. in the North Park P.U. in fiscal year 1968.		1) See planned action 1 (a) 2) Upon evaluation of the initial inventory a biannual survey of all 35 miles of existing stream fisheries should be conducted to determine trends and recommended improvements. a) These surveys should start in fiscal year 1980 and would require one permanent position and one temporary (6 month).		1) Final Report 1) Compilation of data and analysis of results.	

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
3) Establish the Greenback Cutthroat trout populations in suitable streams in the North Park P. U.		1) Evaluate all stream & riparian habitat inventories conducted by DOW and data from objective 2 for suitability of any stream on P. L. with a natural barrier for introductoon and evaluation of the Greenback Cutthroat Trout.		1) Selection of a stream and establishement of the Greenback Cutthroat trout in the North Park P. U.	

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
4) Improve bank cover and riparian habitat on Indian Creek, Government Creek, North Fork North Platte River, Goose Creek, Beaver Creek.		1) Fencing out livestock along stream banks & utilize water gaps. 2) Plant willows, alders, grasses and forbs, in fenced areas. 3) Work on a coop agreement to improve riparian habitat on forest service, state lands and private lands above and below the P.U. segments & mileage a) Indian Cr. 2.0 mi. 2 seg. b) Government Cr., 0.9 mi 1 seg. c) No. Fork No. Platte 1.28 5 seg. d) Goose Creek 0.32 e) Beaver Cr. 0.60 e seg. 4) Supplement AMPS to restrict livestock grazing along stream banks through fencing.		1) Biaannual fisheries surveys.	

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
5) Improve stream pool-riffle ratio & pool quality on all N.R.L.		1) See objective 1 & 2 a) After evaluation of these studies determine sites for gabions, logs, & weir construction to improve pools and riffles.		Biannual fisheries surveys. a) stations will be set up on each mile or segment of N.R.L. streams	
6) Reduce stream silt composition to maximum of 10 percent.		1) Evaluate the watershed and soil characteristics in the N.P. HMP area a) Utilize gabions, logs, weirs and siltation structures to reduce siltation. b) Formulate grazing practices & watershed habitat improvements to reduce erosion through AMP utilization. c) Evaluate all intermitant streams on N.R.L. for suitable sites for installation of siltation structures.		1) Stream monitoring on an annual basis a) Stations will be set up on each mile or segment of N.R.L. stream. 2) Completion of projects with annual maintenance inspections.	

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
7) Increase bank classification to a minimum of 60 percent shrubs with a grass-sedge-forb understory.		1) See objective 4 & P.A. 1,2,3,4.		Biannual survey	
8) Increase stream canopy cover to 40 percent on all P.L.		1) See objective 4 & P.A.		Biannual survey	

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
9) Provide public access to 175 miles of existing stream fisheries and 1000 acres of existing & potential lake/res. fisheries.		1) Easements & condimnation to supply access a) Engineers studies b) See base map. c) Cadastral Surveys.		Access obtained	

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
10) Obtain water level information on all reservoirs lakes and ponds capable of maintaining a fisheries program within the North Park P.U.		1) Initiate an information research process with the Division of Water Resources, BLM engineers and supplement with BLM fisheries biologist field work.		1) Analysis of research and recommendation for minimum water levels to maintain a fisheries.	
11) Provide new reservoir fisheries habitat in the North Park P.U. on perennial streams of low flow fisheries values.		1) Evaluate stream flow measurements from objective 1. 2) Set up on engineers evaluation of selected sites and recommendations of alternate sites. 3) Work on coop agreement with DOW for development of sites including water rights, land acquisition and access.		1) Development of new sites	

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
12) Maintain the excellent riparian habitat on the North Platte River, South Fork Big Creek and North Sand Creek.		1) Fence the segments on P.L. and provide water gaps for livestock. a) Work w/amp to implement this fencing.		1) Biannual Surveys a) Evaluate for possible limited grazing.	
13) Improve the fisheries habitat to realize the fisheries potential on Grizzly Creek.		1) Determine soil and watershed characteristics and problems. 2) Study the beaver situation in relationship to the ecosystem. 3) Request the Colo. DOW to begin stocking 200 brown trout (2"-4") per mile of Grizzly Creek. 4) See Objective 4, 5, 6, 7, & 8.		1) Biannual surveys of each mile or segment of streams on N.R.L. in the North Park P.U.	

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HABITAT MANAGEMENT PLAN PROGRESS REPORT

OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
14) Initiate a cooperative agreement with the DOW to assist them in conducting and managing all reservoirs and lakes that border P.L. in the North Park P.U.		1) Set up a cooperative agreement with the DOW on those reservoirs and so designated. a) This agreement should enable BLM and state biologist to conduct joint surveys to better evaluate the fisheries and then establish management recommendation that would enhance the fisheries.		1) Management by DOW with concurrence from the BLM.	
15) Maintain the minimum stream standards of a B1 stream under the parameters established by the Colorado Dept. of Health		1) Establish stream quality monitoring stations on each mile or segment of stream on P.L. within the North Park P.U. a) Monitor these stations twice a year (spring & fall).		1) Results of annual stream monitoring.	

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
16) Improve public awareness and increase utilization of stream and reservoir fisheries in the North Park P. U.		1) Post all existing public access on reservoirs and streams in the P.U. a) see lease map.		1) Completion of posting with public landowner acceptance.	
17) Develop and protect all perennial springs in the North Park P.U. (see overlay)		1) Identify springs meeting these standards 2) Set up projects in AWP 3) Utilize AMP for development and identification of potential springs 4) Archaeological clearance 5) Engineers studies and Cadastral surveys.		1) Completion of Project with periodic maintenance and investigation.	

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
18) Create a fisheries reservoir on Spring Creek.		1) Watershed and soil evaluation 2) Engineers Feasibility study and Cadastral survey 3) Water rights acquisition 4) Cooperative agreement with DOW for management and stocking		1) Reservoir completed	
19) Obtain baseline data on invertebrate populations abundance and diversity in the North Park P.U. on P.L. streams that could be adversely impacted by future resource developments in the area in fiscal year 1978.		1) Set up a benthic sampling project to establish baseline data to compliment water quality data. a) Determine scope and implementation of study. b) Establish coop agreement with DOW if it is the most expediant. c) Hire one 6 month temporary to collect samples and contract private lab analysis.		1) final report	

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OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
20) Upon completion and evaluation of the basline invertebrate study, establish an annual invertebrate collection on all P.L. streams in the North Park P.U. that will be effected by future resouce developments.		1) Set up a spring and fall collection on all selected streams to detect any impacts. a) These collections can be done by a 6-month temporary. b) Collections should be analyzed by contract lab. c) This analysis will compliment the water quality monitoring.		1) Annual invertebrate diversity report and alleviation of resource impacts.	

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HABITAT MANAGEMENT PLAN PROGRESS REPORT

OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATIONS	DATE COMPLETED
21) Provide for float trips which would cover 39.28 miles of the North Platte River.	Float Trip No.	1) Provide access at the following coordinates: Coordinates	Float Mile	1) Float Trips realized Float Length	
	A.	SW¼.SW¼, Sec.19T8N.,R.80W.		10.16	
	A.	NE¼,NE¼, Sec.6,T.8N.,R.80N	10.16		
	B.	NW¼,SW¼,NW¼, Sec.28, T.9N. R.80W.	14.38	4.22	
	C.	NE¼,SW¼, Sec.10, T.10N., R.80W.	29.38	15.00	
	D.	SW¼,SE¼, Sec.2, T.11N., R.80W.	39.28	9.90	
		2) Build boat slides at each access point.			
		3) Provide for minimum flows to maintain float trips.			
		4) Set up P.R. programs to alleviate problems between recreationists and ranchers.			

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22) Improve trash collection at the following lakes: Cowdrey Lake Walden Reservoir Seymour Lake Hecla Reservoir MacFarlane Reservoir		1) Set up a coop agreement with the Colo. DOW to establish a better means of collecting trails on P.L. around these lakes. 2) Utilize public relation efforts to help improve public awareness of trash problems.		1) Clean areas	

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TABLE V
HABITAT IMPROVEMENT PROJECTS

Pri-or-ity	Job Name	Man Months Purpose	Man Months Need	Cost 1/	Units	Target Species	Objective Served	Out Year
1	Hebron Wells, pumps & power	Layout, EAR Contract	2.50	$120,000	4 wells & 2,000 gpm	Waterfowl, shorebirds, raptors, sage grouse	WS-1 WS-2	
2	Hebron Slough Islands	Layout, EAR Contract Super	0.50	5,000	25 earthen islands	Waterfowl, shorebirds	WS-1 WS-2	
3	Hebron Reservoirs	Layout, EAR, Contract super	0.75	5,000	5 reservoirs	Waterfowl shorebirds	WS-1 WS-2	
4	Hebron Water Diversion Gate Installation	Layout, Contract super	0.50	9,500	19 gates	Waterfowl shorebirds	WS-1	
5	Hebron Reservoir Protective Fencing	Layout, Contract super	0.50	10,125	3.75 mi. fence	Waterfowl shorebirds	WS-1	
6	Sudduth Fence Modification	Layout, EAR, contract super	1.0	6,000 30,000	15 miles	Antelope mule deer	A-1	
7a	Spring Creek Retention Reservoirs	Layout, EAR, contract super	1.0	10,000	3 1,000 cu. yd. reservoirs	Waterfowl sage grouse	WS-3	
7b	Spring Creek Reservoir Protective Fencing	Layout, EAR contract super	0.5	8,100	3.0 miles fence	Waterfowl, sage grouse, shorebirds	WS-5	
8	Alkali Lake Islands & Potholes	Layout, EAR, contract super	0.75	3,000	5 islands 5 potholes	Waterfowl shorebirds	WS-7	

1/ Cost does not include Man months

TABLE

HABITAT IMPROVEMENT PROJECTS

Priority	Job Name	Man Months		Cost 1/	Units	Target Species	Objective Served	Out Year
		Purpose	Need					
9	Antelope Spring Protective Fence	Layout, EAR, contract super	0.25	$ 2,700	1 mile fence	Antelope, sage grouse, non-game	A-2 SG-4 NG-1	
10	Deer Creek Spring Development	Layout, EAR contract super	0.25	2,500	1 tank, ¼ mi. pipe, 1 catchment box	Antelope sage grouse	A-2 SG-4	
11	Deer Creek Retention reservoir	Layout, EAR, contract super	0.50	8,000	3 4000 cu yd reservoir 3 water level control structures	Sage Grouse Waterfowl	SG-4 WS-4	
12	Walden Reservoir Protective Fence	Layout, EAR, supervision	0.50	6,750	2.5 mi fence	Waterfowl, sage grouse, shorebirds	WS-6 SG-4	
13	Hebron Slough Fence Modification	Layout, EAR, contract super	0.50	2,000	3 mi fence to 1737 Manual spec.	Antelope Mule Deer	A-2 MD-4	
14	MacFarlane Reservoir Protective Fence	Layout, EAR, contract super	0.50	12,340	4.2 mi fence	Waterfowl, shorebirds	WS-5	
15	Owl Mountain Patch Cuts, & Seedlings	Layout, EAR, contract super	2.0		10 20-acre patch cuts	Deer, Elk, blue grouse	MD-5 E-1 EG-1	

1/ Cost does not include Man Months

TABLE
HABITAT IMPROVEMENT PROJECTS

Priority	Job Name	Man Months		Cost 1/	Units	Target Species	Objective Served	Out Year
		Purpose	Need					
16	Green Ridge Patch Cuts & Seeding	Layout, EAR, contract super	2.0		10 20-acre patch cuts	Mule Deer, elk, blue grouse	MD-5 E-1 BG-1	
17	Buffalo Peak Patch Cuts & Seedings	Layout, EAR, contract super	1.0		5 10-acre Patch cuts	Mule Deer, Elk blue grouse,	MD-5 E-1 BG-1	
18	Lee Draw Pipeline and Tanks	Layout, EAR, contract super	0150	$4,000	2 tanks, 1.5 mi pipeline	Antelope Non-game	A-1 NG-1	
19	Antelope Well #1 Pipeline & tanks	Layout, EAR, contract super	0.25	1,500	1 tank & 0.5 mi pipeline	Antelope non-game	A-2 NG-1	
20	Case Spring Wet Meadow Protective Fence	Layout, EAR contract super	0.25	2,700	1 mile fence	Sage grouse, Antelope Non-game	SG-4 A-2 NG-1	
21	Case Spring Wet Meadow Expansion Dike	Layout, EAR, contract super	0.25	1,000	2,000 cu yd dike	Sage Grouse Non-game Antelope	SG-4 NG-1 A-2	
21a	Manville Draw Protective Fence & Meadow Expansion	Layout, EAR, contract super	0.25	3,400	1.25 mi fence 1 stock Tank 600' plastic Pipe	Antelope Sage Grouse	A-2 SG-4	
22	Sage Grouse Strutting Ground closures	Layout, EAR, contract super	0.25	500	2 road closure 2 blinds	Sage Grouse		

1/ Cost does not include Man months

TABLE
HABITAT IMPROVEMENT PROJECTS

Priority	Job Name	Man Months		Cost 1/	Units	Target Species	Objective Served	Out Year
		Purpose	Need					
23	Green Spring Fence, Pipeline and Tank	Layout, EAR, contract super	0.25	$2,350	0.5 mi fence 0.25 mi pipe 1 tank	Sage Grouse Antelope	SG-4 A-2	
24	Peterson Ridge Pipeline and Tank	Layout, EAR, contract super	0.25	2,500	0.5 mi pipe 1 tank	Antelope	A-2	
25	California 17 Spring Protective Fence, Pipeline & Stock Tank	Layout, EAR, contract super	0.5	4,700	1 mi. fence 0.25 mi. pipe 1 tank	Antelope Sage Grouse	A-2 SG-4	
26	California 7 Retention Reservoir Repair	Layout, EAR, contract super	0.5	1,000	3,000 cu yd reservoir repair	Antelope, Sage Grouse	A-2 SG-4	
27	Grizzly Pond Protective Fence	Layout, EAR, Contract super	0.25	1,500	0.5 mi fence	Mule deer, waterfowl, blue grouse	MD-4 WS-5 BG-1	
28	Fish Hatchery Fence Modification	Layout, EAR, contract super	0.25	4,100	1.5 mi fence	Antelope, Mule deer	A-2 MD-4	
29	California 7 Reservoir Pro-	Layout, EAR, contract super	0.25	1,500	0.5 mi. fence	Sage Grouse, Antelope	SG-1 A-2	
30	California 6 Reservoir Protective Fence	Layout, EAR, contract super	0.25	1,500	0.5 mi. fence	Sage Grouse, Antelope	SG-4 A-2	

1/ Cost does not include Man Months

TABLE v
HABITAT IMPROVEMENT PROJECTS

Priority	Job Name	Man Months		Cost 1/	Units	Target Species	Objective Served	Out Year
		Purpose	Need					
31	A 8 Fence Modification	Layout, EAR, Contract super	0.25	$3,000	5 mi fence to 1737 spec	Antelope Mule Deer	A-2 MD-4	
32	Damfino Reservoir 1 and 2 Protective Fence	Layout, EAR, Contract super	0.25	3,000	1 mi. fence (2 @ 0.5 mi)	Waterfowl Shorebirds	WS-	
33	Walden Reservoir Goose Nesting Platforms	Contract super, Layout, EAR	0.50	1,000	5 floating platforms with anchors	Canada geese	WS-2	
34	MacFarlane Reservoir Goose Nesting Platforms	EAR, contract super	0.50	1,000	5 floating platforms with anchors	Canada geese	WS-2	
35	Damfino Reservoirs 1 and 2 Goose Nesting Platforms	EAR, contract super	0.50	800	4 floating platforms with anchors	Canada Geese	WS-2	
36	North McCallum Road and Trail Rehabilitation	Layout, EAR contract super	0.25	1,500	3 miles rehabititation	Antelope, Mule deer, sage grouse	A-1 MD-3 SG-1	
37	Battlement Road Rehabilitation	Layout, EAR, Contract super	0.25	1,000	2 miles rehabilitation	Antelope, Mule deer-sage grouse	A-1 MD-3 SG-1	
38	North Platte Fence Modification	Layout, EAR, Contract super	0.25	2,700	1.0 mi. 1737 spec. fence	Antelope Mule Deer	A-1 MD-4	

1/ Cost does not include Man Months

TABLE
HABITAT IMPROVEMENT PROJECTS

Pri-or-ity	Job Name	Man Months Purpose	Man Months Need	Cost 1/	Units	Target Species	Objective Served	Out Year
39	North Platte River Boat Ramps	Layout, EAR, contract super		$2,000			F-9 F-21	

1/ Cost does not include Man Months

E. COORDINATION WITH OTHER PROGRAMS AND AGENCIES

This HMP is the first activity plan to be written in any resource activity for the entire North Park Planning Unit area. It is consequently difficult to apply the specifics of this plan, having expressed objectives for each project, to the yet to be defined specific objectives or projects within any resource activity such as forest management, range management, minerals management, etc.

The land use interphase between wildlife and other activities within the North Park Planning Unit has been discussed specifically in the North PPark MFP, 1975 and subsequent update, 1977. All conficts were resolved and have been identified as constraints to this HMP in section .21C of this document. Where other activity management objectives are not defined, MFP resource management decisions by activity are implied.

Because of the reasons presented in the above paragraphs, the planned actions of this document and supporting sections have become a review document for coordinating with other programs by the reviews of the Craig District Resource Staff, the Colorado State Office Staff along with area specialists.

The coordination with other agencies such as USFS, DOW, FWS and SCS has taken place in the preparation of the HMP. Each agency has been presented a draft document for review and comment. The planned actions coordinate with local and regional plans of these agencies.

Support Activities

a. Access Development, Improvement, and Management

Approximately one half of the HMP area has legal access to the large blocks of public land. Of those areas not having legal access, only two will require some new road construction. On existing roads either on public or private land, there will be a need to upgrade the system to meet BLM requirements for the transportation plan. The access development described below will open large tracts of public land to the public and enable wildlife populations to be more efficiently managed.

Table 8 presents the needed access by priority and lists the estimated costs and man-months needed for their acquisition. See Map 1 for the location of the access areas.

Lower Hebron Slough

To facilitate wildlife habitat improvement and management access, approximately 7.80 miles of road will be developed with 2.0 miles of easement being required. There will be need for a small amount of construction to avoid tracts of private land. This system will develop approximately 5,520 acres and will provide access to MacFarlane Reservoir.

Owl Mountain

This development is to provide hunter and habitat management access and a road for forest development.

Approximately 1,960 acres of public land and 640 acres of state land will be accessible from the road system. Two easements will be required, one approximately 0.4 miles on private land and the other 0.6 miles on state land. The total length of the access road will be 3.6 miles, all of which will be new road construction.

Green Ridge

The Green Ridge block, 1,560 acres, will be developed by acquiring two easements along an existing road. The proposed access will provide hunting, habitat improvement, and forest management access. The existing road on private land is 1.25 miles long; new roads will be built on public land.

North Sand Hills

An existing road 2.875 miles long will be used for access to this area. One easement, 1.375 miles in length, will be acquired from private landowner. Hunter access to 1,320 acres of public land and numerous acres of state and national forest will be provided by this acquisition.

Boettcher Ridge

Access to approximately 2,800 acres of public land along Boettcher Ridge will provide recreation as well as big game range management opportunities. An existing road along the east side of the ridge will be used for access. No new roads will be required. One easement, 2.0 miles long, will be obtained from one private landowner.

Sheep Mountain

Access to this 3,360 acre tract of public land currently exists from a Jackson County road. The access points should be located and designated along the county road to curtail conflicts with adjacent private lands. Easements are not required to this area.

Buffalo Peak

A temporary, one-half mile easement has been obtained for timber management purposes and will expire in 1981. Since the land will be retained by BLM and managed for multiple resources, it will require permanent access in the future. Permanent access will provide for hunter access, habitat improvement, timber management and possible recreation use of the 1,700 acre tract.

Pitch Pine Mountain

Pitch Pine Mountain is a small area of 640 acres that will be a big game winter range monitoring area and will only require administrative rights across the private land. This can be accomplished by a nonexclusive easement or an agreement with the landowner. There is 1.25 miles of private land to cross and .85 miles of existing road on BLM.

b. Cooperative Agreements with the Colorado Division of Wildlife
   1) Establish a cooperative agreement with the DOW to assist them in conducting lake and reservoir surveys on each of

the reservoirs that border Public Lands within the North Park P.U. This agreement should enable BLM and state fisheries biologist a more detailed fisheries survey and additional expertise in managing the numerous reservoirs in the North Park P.U.

2) Set up a cooperative agreement with the DOW establishing a better means of trash collection on public lands around Cowdrey Lake, Walden Reservoir, Seymour Lake, Hecla Reservoir and MacFarlane Reservoir. This agreement should include cost sharing and utilization of public relations to improve public awareness of trash problems.

c. Posting all Easements and Access to Public Lands

The resources in the North Park P.U. could be utilized more extensively with a program of signs to increase public awareness of access to Public Land. This program should be initiated the third out year and YCC crews could be used to reduce costs. This program should include any new easements of access developed through the HMP.

TABLE 8

Priorities for Access Development, Improvement and Management

Priority	Project Name	Out Year	Units	MM 1/	Costs 2/	Action
1	Lower Hebron Slough	2	7.80 mi.	7	10,000	Acquire four easements, survey new road construction and existing roads.
2	Owl Mountain	2	3.60 mi.	5	8,500	Acquire two easements, survey new road construction.
3	Green Ridge	2	1.25 mi.	3	5,000	Acquire 2 easements, survey existing roads.
4	North Sand Hills	3	2.90 mi.	4	6,000	Acquire one easement, survey existing roads.
5	Boettcher Ridge	3	4.75 mi.	5	8,000	Acquire 1 easement, survey existing roads.
6	Sheep Mountain	3	3.85 mi.	4	4,400	Acquire one easement, survey existing roads.
7	Buffalo Peak	4	0.5 mi.	1	2,400	Acquire one easement.
8	Pitch Pine	4	1.7 mi.	3	4,200	Acquire two non-exclusive easements, survey existing roads

1/ The number of man-months estimated allows for route analysis, environmental assessment record (EAR), archaeological reporting, surveying, drafting, appraising, negotiating and general case processing.

2/ The estimated costs includes all the items in 1/ and the estimated appraisal price.

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6

UNITED STATES GOVERNMENT

Memorandum

1790 (163)

TO : District Manager, Craig (110)

DATE:

FROM : Area Manager, Kremmling

SUBJECT: Environmental Assessment Record for Implementing the North Park HMP

A review of the environmental assessment record to implement the North Park Habitat Management Plan shows that the environmental impacts caused by the proposed action can be adequately mitigated and will not significantly affect the quality of the human environment. Therefore, preparation of an impact statement pursuant to Section 102(2)(c) of PL 91-190 (83 Stat. 852) is not recommended.

5010-108

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

4350-5526

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

EAR FACE SHEET

OFFICE: Craig District FY & REPORT #

ACTION: Implementation of the North Park Habitat Management Plan NO. OF PAGES ten
(Project Name, Case Type, etc.)

LOCATION: Kremmling Resource Area North Park SERIAL NO. C.-

REQUIRED BY 43 CFR 23: YES ☐ NO ☒

TEAM SIGNATURES:	TITLE	RESOURCE VALUES ASSIGNED	HOURS
Charles J. Cesar	Wildlife Biologist	All	20
	Area Manager	All	5
Adrian W.	Natural Resource Spec.	Minerals	2
Bruce Elvin Clapp	Outdoor Recreation Planner	Recreation	5
Thomas D. McNabe	Archaeologist	Cultural Resources	1
	Range Conservationist	Livestock Grazing- watershed	2
William Lanning	Forester	Timber Resources	1
Glenn Wallace	Realty Specialist	Lands	1

ENVIRONMENTAL COORDINATOR: Terence R. Loyer (Signature) December 13, 1977 (Date)

COMPLIANCE OFFICER: Charles J. Cesar (Title or Name)

DISTRICT MANAGER: (Signature)

December 13, 1977 (Date)

CSO 1790-1 (Aug. 1975)

Environmental Assessment Record
for
Implementing the North Park HMP

I. Description of the Proposed Action

See the Introduction and Planned Actions sections of this plan.

II. Description of the Existing Environment

A description of the existing environment of North Park is found in Section A of this plan.

III. Analysis of the Proposed Action and Alternatives

Alternatives of the proposed action were discussed through close coordination between the Bureau of Land Management, Colorado Division of Wildlife, U. S. Fish and Wildlife Service, U. S. Forest Service, Soil Conservation Service, Colorado Department of Water Resources, and local people. Some alternatives that were discussed include:

Control of wildlife numbers commensurate to the existing habitat productivity;

Maintain the existing habitat condition throughout the basin;

Change season of use, numbers, or classes of livestock on critical ranges; and

Acquire lands as necessary with critical habitat components to offset the impacts and degradation due to coal, oil and gas, and other mineral development.

These objectives and alternatives were analyzed in the North Park MFP and became a public resource allocation plan. The resulting proposed action is an extensive wildlife habitat management plan.

The objectives reached will compliment the natural environment and in many cases mitigate the environmental impacts heretofore experienced within the area. The guidance given to the management of each resource activity will be generally applied by habitat type (see Planned Action & Objectives). While none of the above altenatives were accepted as the complete panacea for meeting wildlife needs at this time, they can be re-evaluated in the future.

The proposed action inherently contains two components for reaching habitat objectives. These are control or management of all activities impacting wildlife habitats and construction of facilities. While areas of specific management parameters are defined as shown in Table 4 , additional areas may be defined and areas proposed may be refined in size or location.

Project or facility location, type, size and specifications are defined as much as possible. Complete project planning (e.g. engineering, layout, design, and sketching) is not complete. Certain impacts can be expected to occur with each type of project planned, once exact design and dimensions are determined. Mitigating from impact analysis will be determined on a case-by-case basis in a supplemental EAR.

A. Unmitigated Impacts

Impacts possibly resulting from this proposed action are temporary. The effects and objectives are to enhance the natural environment.

Generally, temporary impacts include:

1. Wildlife
    a. Loss of forage and habitat
    b. Loss or modification of special use areas
    c. Species disturbance
    d. Impacts to non-target species
    e. Disruption to movement pattern
    f. Fencing hazards
2. Livestock
    a. Loss of forage
    b. Disruption of movement patterns
    c. Concentration of livesotck
3. Soil and Water
    a. Increased surface disturbance and soil erosion.
    b. Increased sediment loads
    c. Reduced water quality to nearby streams
    d. Possible water right conflicts with other users
    e. Increase in noxious weeds
4. Visual and Others
    a. Project construction could be unharmonious
    b. Wildlife disruption by roads for access to all resources
    c. Timber harvest plans may be modified for all considerations
    d. Air and noise degredation

B. Possible Mitigating Measures

The following possible mitigating measures should be applied where possible:

1. Downed timber should be piled or sold to woodcutters immediately after treatment. Scattering and trampling of conifer slash in fall months is necessary to insure cone shatter. Withhold livestock grazing until regeneration is established. Sagebrush treatments should be designed for partial kill so that young, vigorous plants will remain to provide wildlife forage. All seed mixtures should be designed to meet the needs of known wildlife species in the area (i.e., favorable species of brush, trees, grass, or forbs). Vegetation removed for reservoir construction should be compensated for by a proper seed mixture, including emergent and submergent species. Fertilize as necessary.

2. Potential destruction of wildlife special use areas would include impacts on deer and elk winter concentration areas, calving and fawning grounds, blue grouse and sage grouse breeding complexes and wintering areas, and raptor nesting areas. These impacts would be mitigated by ground inspections and consulting all available inventory records and locating projects well away from these areas unless the project is specifically designed to improve the special use area in question.

3. Disturbance of wildlife species can be mitigated by the following measures. In the case of raptors, habitat buffering should be incorporated into project contracts. In critical deer and elk winter range, no project work should be undertaken during the period November 1 through April 15. In elk calving areas,

no project work should be undertaken during the period May 1 through June 30. No project work should be undertaken in deer fawning areas during the period May 15 through July 15. These dates may be expanded or contracted depending on the specific area in question. Projects near sage grouse strutting ground should not be undertaken during the period March 1 through April 30 (specific dates will vary depending on snow conditions on grounds). Projects near nesting and brooding grounds should have time constraints placed on them based upon the relationship between the observed strutting period for the particular year and the known nesting and brood rearing interval required by sage grouse. No activity should alter the existing physiological or biological character of the site.

4. Some habitat loss to non-target species (particularly lagomorphs, rodents, and small birds) is unavoidable in most projects, but temporary losses can be reduced by insuring that some brush and slash piles are left in the project area and by undertaking revegetation efforts as soon as possible. In no case will a project be undertaken in an area essential to the continued survival of non-target wildlife species.

5. Disruption of wildlife movement patterns can be minimized by limiting size of projects, adhering to fencing standards, providing cover corridors and by not undertaking projects during migration periods.

6. Increased surface disturbance and soil erosion can be lessened by selecting manipulation methods that minimize disturbance (i.e., hand thinning instead of chaining, etc.); constructing

waterbars on access roads into project areas; providing gully plugs in project areas; proper timing of projects; implementing projects only on slopes and soil types suitable for the project; and by fertilizing and revegetating areas as soon as possible.

7. The measures taken to mitigate "6" above can also be used to mitigate against increased sediment loads and decreased water quality.

8. Increased air and noise pollution can be lessened by insuring that equipment is properly muffled and in good running order.

9. Loss of harvestable timber can be avoided by holding timber sales prior to, instead of after, project work.

10. Impacts on the visual resource can be lessened by incorporating applicable visual management techniques into the design of all projects. Where significant degradation of visual resource is unavoidable, signing should be used to inform the public that wildlife benefits expected from the project outweigh the temporary visual disruption.

11. To avoid adverse wildlife-human interactions resulting from new roads into project areas, all new roads should be physically closed after the project is completed, unless they are needed to maintain the project. If maintenance roads are needed, seasonal closures should be instituted to prevent disturbance to wildlife during critical periods.

12. Loss of livestock AUM's due to wildlife projects can be lessened by prompt revegetation efforts and inclusion of plant species beneficial to livestock into seeding mixtures.

13. Disruption of livestock movement patterns can be avoided by the methods described in "5" above and by close coordination in design, location, and timing of projects between the Wildlife and Range sections.

14. Concentration of livestock on wildlife project areas can be reduced by protective fencing measures and by timing project work to coincide with periods of rest called for in allotment management plans.

15. Destruction or disruption of sage grouse breeding complexes and wintering areas by sagebrush manipulation projects can be reduced or avoided entirely by adhering to guidelines laid down by the Western States Sage Grouse Workshop. Copies of the guidelines are on file at the Craig and Kremmling offices of the BLM.

16. Exclusion of livestock from needed water sources caused by protective fencing can be eliminated by piping water to troughs, creating livestock pass-throughs, or by developing alternative water sources in the same area.

17. Water right conflicts resulting from reservoir construction and well and spring development can be resolved by limiting size of projects and by thoroughly investigating water right claims before implementing the project.

18. Competition between existing wildlife populations and introduced wildlife species will be avoided by careful analysis of all proposals and approval of introduction of only those species that have minimal habitat requirements overlapping with existing species.

19. Archaeological surveys will be conducted before any ground-disturbing activities take place.

C. Adverse Impacts That Cannot Be Avoided

1. Some temporary loss of forage will result from many of the HMP projects, but eventually forage production on these areas will be significantly increased.

2. Minor loss of habitat of non-target species will occur on most improvement project sites.

3. Surface disturbance and minor soil erosion will occur on most projects sites, but this should be of a temporary nature.

4. Increased sediment loads and decreased water quality will be minor and temporary if the above mitigating measures are followed.

5. Temporary and localized increases in air and noise pollution are unavoidable.

6. Some alteration of the visual environment is unavoidable, but the small size of the projects will keep this to a minimum.

7. No permanent loss of livestock forage will result from protective fencing measures.

8. Minor increase in wildlife mortality due to fence construction can be expected even if the standards contained in Bureau Manual 1737 are followed.

9. The increased competition between livestock and wildlife for available forage brought about by allowing wildlife populations to increase could be significant unless project work and Allotment Management Plan implementation keep pace with expanding wildlife populations.

10. It is possible that some archaeological sites may be missed by archaeological surveys and that such sites may be destroyed.

D. Relationship Between Short-Term Use and Long-Term Productivity

Short-term loss will be restricted to the impacts of wildlife and other resources described in the preceding section. Following full implementation of the plan, the eventual long-term gain will be the accomplishment of the objectives outlined in Section B (Management Objectives) of the plan. In addition, a significant increase in hunter and fisherman days and non-consumptive wildlife use will result from implementation of the plan. Benefits claimed for all activities cover all environmental components (e.g., conservation of water, soil, flora, fauna, and consumptive and non-consumptive uses.

E. Irreversible and Irretrievable Commitment of Resources

The expenditure of the funds required to initiate project work is the major commitment of resources that will result from implementation of the plan.

In some cases, vegetative type conversions will result in a utilization of the forestry resource, but this is not irreversible in the sense that eventually the original plant community could probably be restored by natural succession.

It is possible that some unknown historical or archaeological site will be inadvertently lost, but it is standard Bureau Policy to conduct archaeological surveys on all project areas.

VI. Public Interest and/or Controversy

Copies of all drafts of the Habitat Management Plan have been sent to: 1) Colorado Division of Wildlife, 2) U.S. Fish and Wildlife Service, and 3) U.S. Forest Service.

Comments from these agencies have been received and acted upon. Comments were solicited from all publics during the development of the Management Framework Plan for North Park Planning Unit and the 1977 update.

V. Recommendations

At the time Job Documentation Reports detailing methods of implementation, exact locations, contract stipulations, etc., are prepared, the possible mitigating measures listed under III, A of this environmental assessment record can then be prepared to determine if the measures included in the project plan could adequately mitigate expected environmental impacts of the individual project, or if other impacts could occur which may call for further mitigating measures. A supplemental EAR will be completed for each project implemented as part of this HMP. Further stipulations or recommendations on project construction will be made at that time.

NORTH PARK HABITAT MANAGEMENT PLAN PROGRAM PACKAGE

NARRATIVE

(1) Situation and Problem:

North Park provides habitat for over 250 species of wildlife. Habitats of many species, especially those associated with the sagebrush ecosystem, have been reduced in the past by vegetation manipulation and energy development. Of those species whose habitat has reduced, sage grouse and mule deer have been most adversely impacted.

North Park is a potential high energy development area. Coal and oil are the two most plentiful fuels located in the park, and the energy crisis has made exploitation of these fuels highly probable in the near future.

Coal strip mining and oil well drilling will degrade much of the existing wildlife habitat in North Park. Protective and improving measures must be taken, through a wildlife management plan, to mitigate the loss of wildlife habitat to energy development in North Park.

(2) Objectives:

(a) Improve the quality of 90,000 acres of mule deer winter range, with emphasis on critical areas, to increase mule deer number by 50% by 1985.

(b) Improve and maintain the sagebrush type in North Park to support the present sage grouse numbers for the next ten years.

(c) Locate and determine habitat status of threatened or endangered wildlife on national resource land in North Park.

(d) Maintain and improve habitat to increase waterfowl and shorebird production by 8,000 breeding pairs by 1985,

(e) Improve and maintain antelope habitat to support an increase of 250 by 1985.

(f) Improve the quality of 290,000 acres of elk habitat to support an increase of 1,000 elk by 1985.

(g) Locate and determine status of furbearer habitat on national resource land in North Park.

(h) Improve and maintain 1,500 acres of cold water lake habitat and 160 miles of cold water stream habitat in North Park.

(3) Inventory and Analysis:

The North Park URA-MFP was completed in June 1975. North Park has several unique wildlife values that should be addressed. Studies have shown the sage grouse population to be at the highest numbers the existing habitat will support. The population also has been produceing at maximum for the past two years. North Park also contains the largest sage grouse strutting ground in Colorado.

The Colorado Division of Wildlife rates North Park as the second most important duck production area in the entire state. Only the San Luis Valley produces more ducks annually.

Other important wildlife in North Park include mule deer, antelope, elk, raptors, furbearers, non-game mammals, and song birds. Together these species provide many days of consumptive and non-consumptive uses.

(4) Program Formulation:

(a) Alternatives:

(1) HMP implementation would provide the opportunity to begin measures that would mitigate adverse impacts on wildlife habitat brought about by energy development.

(2) Delayed or no HMP implementation may result in the loss of wildlife habitat to energy development. Habitat loss will result in loss of wildlife numbers, uses, and monetary value.

(3) The Colorado Division of Wildlife has expressed interest in implementing habitat improvements in North Park.

(b) Implementation of Improvement Practices:

(1) Funding will be used for the following management practices and personnel related to them:

(a) Range fertilization -- will benefit all species of wildlife associated with the sagebrush ecosystem.

(b) Sagebrush habitat type maintenance -- will benefit all wildlife species associated with the sagebruch ecosystem.

(c) Timber harvest and easement acquisition -- elk habitat will be improved by opening dense stands of monotypic timber.

(d) Fence modification -- will permit free and safe movement by antilope and mule deer. Some fences will be necessary to protect critical wildlife values from livestock uses.

(e) Amphipian and reptile population studies -- information is needed as to the status of amphipians and reptiles on national resource land in North Park.

(f) Threatened or endangered wildlife studies -- an intensive inventory and analysis is needed to determine the presenee of black-footed ferrets, and peregrine falcons on national resource land in North Park.

(g) Water developments -- will benefit all wildlife associated with the sagebrush ecosystem.

(5) Consideration Important to the Proposal:

(a) Because the HMP area provides important wildlife values, the proposed project is economically feasible. Returns measured in man-days use will at least equal the amount of money needed to complete the package.

(b) The proposed project will involve new technology such as big game range fertilization. Game range fertilization has not been used as a management tool in Colorado.

(c) Public input to the recently completed URA-MFP indicated much interest in the enhancement of wildlife values associated with North Park.

(6) Intangible and Spin-off Benefits:

(a) Improvement of the sagebrush habitat type will benefit many species of small mammals and song birds as well as those previously mentioned. A stable su-ply of small mammals will provide increased benefits to coyotes, foxes and raptors.

(b) Livestock forage should increase with the improvement of wildlife ranges.

(c) Watershed conditions will improve with the improvement of wildlife ranges.

(d) Elk habitat improvement practices will provide timber harvest opportunities. The opportunities will enhance the forestry program as well as add to the economy of North Park.

(7) Cost Estimates for Program Package:

(a) Estimate for construction -- Division of Operations, Craig District Office and BAMP project costs.

(b) Man-month cost -- Ed Roberts, Colorado State Office.

(c) Cost of contracted studies -- Piceance Basin HMP.

(8) Position Table for Program Year:

New positions by title and grade -- program year

Position	Grade	Status
Range Conservationist	5/7/9	Permanent
Fisheries Biologist	5/7/9	Permanent
Range Technician	5	Temporary
Watershed Technician	5	Temporary
Wildlife Technician	5	Temporary

(9). Multiple Funding Levels: $ - (000's) P/T = MM's

	# Units	Band I		Band II		Band III	
	Band III	$	P/T	$	P/T	$	P/T
Initiatives, Outputs							
(1) Habitat Improved (acres)	200,000	100	40/60	300	70/55	725	139/110
(2) Habitats of Threatened or Endangered Wildlife Identified	2	69	3/0	138	3/3	286	6/6
(3) Hunter Days Added	200	100	6/0	200	6/6	500	12/12
(4) Streams Improved	3	16.8	6/0	51.4	12/6	65.2	12/12
(5) Fisherman Days Added	56,000	0	0/0	7	3/0	14	3/3
(6) Non-consumptive Visitor Days Added	50	9.2	2/0	9.2	2/0	9.2	2/0

PACKAGE IDENTI- FICATION	C 0 (STATE)	7 8 (PY)	Priority	age Life
				five yrs.

Package Name

Package Purpose

Program Area

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

PROGRAM PACKAGE COVER SCHEDULE

(1)		CURRENT YEAR FY 19 (2)	BUDGET YEAR FY 19 (3)	PROGRAM YEAR FY 19 (4)	PROGRAM YEAR + 1 FY 19 (5)	PROGRAM YEAR + 2 FY 19 (6)	PROGRAM YEAR + 3 FY 19 (7)	PROGRAM YEAR + 4 FY 19 (8)	TOTAL (9)	AVG. ANNUAL PROGRAM OPERATIONS FY 19 (10)
A. COST DATA		$000'S	$000'S	$000'S	$000'S	$000'S	$000'S	$000'S	$000'S	$000'S
Total Costs (Form 1610–28)		20	20	214	229	173	119	104	839	120
Construction (Form 1610–28)					14	14			28	14
Construction Maintenance (Form 1610–28)		--	--		--	2	2	2	6	2
Total Costs Less Construction and Maintenance		20	20	214	215	157	117	102	805	114
WASHINGTON OFFICE USE ONLY										
B. MANPOWER DATA		MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS	MAN-MONTHS
Permanent		7	7	44	44	41	28	28		
Temporary		2	2	30	30	25	15	15		
C. OUTPUT AND WORKLOAD MEASURE DATA		QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY	QUANTITY
Habitats of rare or endangered species identified	a				1	1			2	
	b									
	c				1	1			2	
Habitat improved	a				10000	10000	10000	10000		
	b	1300	1300	1300	1300	1300	1300	1300		
	c				9700	9700	9700	9700		
Hunter days added	a					10200	10500	10800		
	b	10000	10000	10000	10000	10000.	10000	10000		
	c					200	500	800		
Streams improved	a				2	3	3	3		
	b		1	1	1	1	1	1		
	c				1	2	2	2		
Fisherman days added	a				305000	319000	333000	347000		
	b	262000	276000	290000	304000	318000	332000	346000		
	c				1000	1000	1000	1000		
Non-consumptive visitor days added	a	[illegible]			120	130	140	150		
	b	100		100	100	100	100	100		
	c				20	30	40	50		

(Instructions on reverse)

Form 1610–27 (October 1974)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

PROGRAM PACKAGE INPUTS SCHEDULE

PACKAGE IDENTIFICATION			
C	O	7	8
STATE		PY	

Package Name

SUBACTIVITY AND POSITION IDENTIFICATION	CURRENT YEAR FY 19			BUDGET YEAR FY 19			PROGRAM YEAR FY 19			PROGRAM YEAR + 1 FY 19			PROGRAM YEAR + 2 FY 19			PROGRAM YEAR + 3 FY 19			PROGRAM YEAR + 4 FY 19		
(1)	TOTAL COST (000's) (2)	POSITIONS (3)	M/M (4)	TOTAL COST (000's) (5)	POSITIONS (6)	M/M (7)	TOTAL COST (000's) (8)	POSITIONS (9)	M/M (10)	TOTAL COST (000's) (11)	POSITIONS (12)	M/M (13)	TOTAL COST (000's) (14)	POSITIONS (15)	M/M (16)	TOTAL COST (000's) (17)	POSITIONS (13)	M/M (19)	TOTAL COST (000's) (20)	POSITIONS (21)	M/M (22)
4320 Range Mgmt.	2	--	1	2	-	1	43	3	18	43	3	18	43	3	18	10	1	4	10	1	4
Permanent personnel		--	1		-	1		1	12		1	12		1	12		-	1		-	1
Temporary personnel		--	--		--	--		2	6		2	6		2	6		1	3		1	3
4310 Forest Mgmt.	2	--	1	2	-	1	22	2	9	22	2	9	14	1	6	10	1	4	10	1	4
Permanent personnel		--	1		--	1		--	3		--	3		--	2		--	1		--	1
Temporary personnel		--	--		--	--		2	6		2	6		1	4		1	3		1	3
4340 Watershed Mgmt.	2		1	2	--	1	12	1	5	12	1	5	12	1	5	10	1	4	10	1	4
Permanent personnel		--	1		--	1		--	2		--	2		--	2		--	1		--	1
Temporary personnel		--	--		--	--		1	3		1	3		1	3		1	3		1	3
4350 Wildlife Mgmt.	14	1	6	14	1	6	123	4	36	138	4	36	102	4	36	87	4	30	72	4	30
Permanent personnel		--	4		--	4		2	24		2	24		2	24		2	24		2	24
Temporary personnel		1	2		1	2		2	12		2	12		2	12		2	6		2	6
9140 Road Maintenance													2	--	1	2	--	1	2	--	1
Permanent personnel														--	1		--	1		--	1
2940 PLDRT							14	1	6	14	1	6									
Permanent personnel								--	3		--	3									
Temporary personnel								1	3		1	3									
Package total funds	20			20			214			229			173			119			104		
Package total m/m (P)			7			7			44			44			41			28			28
Package total m/m (T)			2			2			30			30			25			15			15
Package total pos. (P)								3			3			3			2			2	
Package total pos. (T)		1			1			8			8			6			5			5	

(Instructions on reverse)

Form 1510–28 (October 1974)

H. Management Evaluation and Revision

A significant portion of funds needed to fully implement the North Park HMP will be used to fund inventories and studies of wildlife habitat. The objective of the inventories and studies will be to provide land and wildlife data needed to effectively preserve and enhance the wildlife values of North Park. The following is a synopsis, in priority order, of the proposed studies and inventories. The inventory and study areas are depicted on the species maps to which each study is directed. A priority listing of projects and studies is found in Appendix IV.

1. Threatened, Endangered, and Sensitive Species Habitat and Population Status

a. Determine location, size, and condition of present habitat capable of supporting:

   (1) Black-footed ferret (U.S.-E)

   (2) Peregrine falcon (U.S.-E)

   (3) Greater sandhill crane (Colo.-E)

   (4) Greenback cutthroat trout (U.S.-E)

b. Determine population status--occurrence, numbers, and reproductive status and success for the above species.

   (1) Methods:

      (a) Ocular reconnaissance of public lands to locate and assess suitable habitat.

      (b) Reconnaissance of suitable habitat to locate animals.

      (c) Observation of animals to determine numbers present and reproductive status.

   Management objectives directly served are TE-1, TE-2.

c. Sensitive Species

(1) Locate active and potential raptor nest sites.

(2) Determine reproductive success of nesting raptors.

(a) Methods:

(i) Survey suitable habitat for nests and breeding activity from May 15 to July 15.

(ii) Observe nests to determine number of young and fledgling success.

d. Amphibian and Reptile Habitat and Population Status

(1) Determine habitat condition and trend.

(2) Determine population status--occurrence, number, and trend.

(a) Methods:

(i) Contract study with DOW. Methods to be determined (trapping, marking, etc.).

Management objective directly served is NG-2.

2. Minimum Stream Flow, Riparian Habitat, and Aquatic Habit Inventory On 35 Miles of Stream in the Planning Unit.

These inventories should be conducted in fiscal year 1978. The work can be contracted through a cooperative agreement with the Colorado Division of Wildlife or by hiring four six-month, temporary fisheries biologists. The minimum flow measurements should incorporate DOW sag-tape methodologies. The riparian and aquatic habitat surveys should utilize both ocular and extensive study transects. Upon completion and evaluation of the inventories, the following projects should be initiated to improve or maintain the fisheries habitat in the North Park Planning Unit.

a. Improve stream pool-riffle ratio and pool quality on all public lands (see Table 6).

b. Reduce stream silt composition to a maximum of 10% (see Table 6).

c. Increase bank classification to a minimum of 60% shrubs with a grass-sedge-forb understory (see Table 6).

d. Increase stream canopy cover to 40% on all public lands (see Table 6).

These projects should be started the next out year following the inventories.

The following streams are known to have declining or poor riparian habitat, and the planned actions stated in Table 4. should be high priorities for habitat projects following the inventory work. These streams are Grizzly Creek (which has the most mileage on public lands in the North Park Planning Units). Indian Creek, Government Creek, North Fork of the North Platte River, Goose Creek, and Beaver Creek. The inventory will designate areas needing work and the type of projects needed to improve the riparian habitat on these streams.

Maintenance only is needed on the following streams: North Platte River, South Fork of Big Creek, and North Sand Creek. This maintenance should be by fencing and utilization of water gaps. These projects should begin the year following the inventories. Coordination with the AMP program should be utilized when possible, to provide the livestock water and still maintain the excellent riparian habitat. This coordination might provide for limited grazing of the riparian habitat as long as the habitat would not be altered.

3. Big Game Range Analysis

   a. Determine vegetative composition, conditions, and trend on 60,500 acres of mule deer winter range; 35,700 acres of elk winter range; and 135,000 acres of antelope range.

      (1) Methods:

         (a) Establish stand composition paced line transects at a rate of one 100-point transect per 1,000 acres on deer range; 2,000 acres on elk range; and 3,000 acres on antelope range. Two permanent photo points will be established along each transect line. Transects and photos will be taken at 3-year intervals beginning in the summer of 1978.

         (b) Four Parker Three-Step Transects will be relocated, taken, and photos compared to the same transect results and photos last read in 1968.

         (c) Browse age and form class transects will be established and read where bitterbrush is available in sufficient quantity to be considered key winter food.

         (d) Permanent pellet group counts will be established along 100-point stand composition transects to determine big game days use per acre on winter range. These will be counted in September of each year.

   Management objectives directly served are A-2, A-3, E-2, E-5, MD-1, MD-6, and SG-1.

4. Livestock and Big Game Forage Competition

   a. Determine competion between livestock and big game for forage on winter ranges.

(1) Method:

(a) Major foods eaten by livestock and big game will be qualified by micro-historical technique from fecal samples. Pellets and dung will be collected on selected sites where competition for forage is suspected. Microscopic slides of fecal samples will be prepared and analyzed to determine precentage of forage classes in the diets of livestock and big game. High similarity of foods consumed and high use on the same plant species may be used to suggest potential high competition.

Management objectives directly served are E-5, MD-6.

5. Invertebrate Populations and Water Quality

Obtain baseline data on invertebrate populations, abundance, and diversity in the North Park Planning Unit on streams bordering public lands that could be adversely impacted by future resource developments. This will involve benthic sampling at predetermined stations to establish baseline data to compliment water quality data. The samples can be collected by a contract with DOW or by hiring temporary employees, whichever is most expedient. The samples will have to be analyzed by a contract laboratory. Upon completion and evaluation of the baseline invertebrate study, an annual invertebrate collection on monitoring stations should be initiated. These samples should be collected spring and fall annually and can be made by a six-month temporary employee. Collections will have to be analyzed by a contract lab. This sampling and analysis will compliment water quality monitoring

c. Identify limiting factors to herd size on the Colorado and Wyoming sides.

(1) Methods:

(a) Live trapping, marking, and release of antelope in cooperation with BLM-Rawlins, Wyoming; Colorado Division of Wildlife; and Wyoming Game and Fish.

Management objective directly served is A-4.

8. Alkali Lake Study

a. Determine if Alkali Lake, because of its chemical composition, supports shore birds unique to the lake's habitat type.

(1) Method:

(a) Ocular reconnaissance of Alkali Lake and surrounding vegetation--observe and record all species seen. Locate nesting sites of snowy plover, least American tern, and avocet, if present.

(b) Review literature, DOW reports, and personal contact data concerning population status, and distribution of observed species to determine uniqueness of these species--threatened, endangered, rare, etc.

Management objective directly served is WS-8.

9. Furbearer Habit and Population Status Inventory

a. Locate and determine amount of habitat suitable for furbearers.

b. Determine population status--occurrence, number, and trend of furbearers.

c. Locate and evaluate habitat areas suitable for introductions.

d. Coordinate this inventory with riparian habitat and water quality study.

e. Determine population status of coyotes and their impact on the North Park Wildlife Habitat Area ecosystem;

   (1) Trapping counts

   (2) Aerial reconnaissance and inventory during winter and spring.

   (3) Food habits analysis--stomach contents of coyotes.

Management objective directly served is FB-1.

10. Minimum Reservoir Drawdown Study

a. Obtain water level information on all reservoirs, lakes, and ponds bordering public lands capable of maintaining a fisheries program within the North Park Planning Unit. Initiate an information research process with the Division of Water Resources and BLM engineers, and supplement with BLM fisheries biologist field work. This information will be used to establish recommendations for minimum water levels to maintain and/or create fisheries programs within the Planning Unit.

b. Provide new reservoirs fisheries habitat in the North Park Planning Unit on perennial streams of low flow fisheries values on public lands. This inventory will involve map review to determine perennial streams through field investigation to select potential sites. These sites then must be evaluated by engineers to determine the feasibility of the site or to make alternate selections. Once a site is selected, a cadastral survey will be needed, and archaeological clearence will be performed. A cooperative agreement with the Colorado DOW for development of sites will be next, including water rights, land acquisition, access, and stocking.

Determine population status of coyotes and their impact on the North Park Wildlife [illegible]

(1) [illegible]

(2) [illegible] and [illegible] springs.

(3) [illegible] habitat [illegible]

[illegible]

[illegible]

[illegible] information [illegible] and [illegible] impact [illegible] within the North Park Plan[illegible] [illegible] with [illegible] engineers, [illegible] field [illegible] information [illegible] recommendations for [illegible] which [illegible] presence within [illegible] North Park [illegible] potential streams [illegible] This inventory [illegible] Division [illegible] potential [illegible] sites. [illegible] evaluated by engineers to determine the feasibility of the site or to make alternate selections. Once a site is selected, [illegible] survey will be needed, and [illegible] will be performed. A cooperative agreement with the Colorado DOW for development of [illegible] will be made, [illegible] water rights, land acquisition, [illegible] and [illegible].

I. Public Affairs

BACKGROUND

The North Park area of Colorado is a high intermountain basin with a variety of wildlife species associated with a predominantly sagebrush habitat type.

CONCEPT AND GOAL

To develop a public awareness program that reaches specific and general publics.

To make aware, inform, involve, and motivate understanding, criticism, support, and dialogue that contributes toward a forum for citizen expression and education.

TARGET GROUPS

Wildlife Conservation: sportsmen's organizations, professional organizations, environmental groups.

Industry: coal, cattle, oil, guides, outfitters, tourists, other resource users.

School Systems: elementary---universities.

Elected Officials: members of Congress, State Legislature, County and local leaders.

GENERAL OBJECTIVES

To create an awareness of the present situation in North Park: data, interrelationships.

To create an awareness of the present and proposed energy development (coal; oil and gas).

To gain an understanding of the impacts of resource development on wildlife and the goal of resource managers to mitigate the impacts with a resulting harmonious relationship between wildlife and resource development.

To enhance communication between BLM and different publics seeking their involvement in an ongoing process of land management.

To allow publics to analyze, based on facts, costs (benefits to environment and society) to show that we are not always faced with dichotomies (either/or situations): that there are alternatives.

TECHNIQUES, METHODS, MATERIALS

Case studies, simulation exercises, slide programs, show-me trips, fact sheets, civic presentations, advisory board programs, radio-TV programs, research projects, displays.

CONTENT

Baseline data--physical, socio-economic.

Projected impacts.

Projected management plans.

SOURCES-RESOURCES

BLM personnel, other agencies, school systems and private organizations, Colorado Division of Wildlife, U. S. Forest Service, U. S. Geological Survey.

LOCATIONS

North Park communities, including clubs, chapters, schools, organizations, wherever interest is generated.

TIME FRAME

From approval of HMP-ongoing.

EVALUATION

By Whom: District and State Office personnel.

When: During AWP functional evaluations.

Objectives: To examine accuracy and format.
To provide additional data.
To make program current.

COSTS--October 1, 1977

Audio-Visual

1 - 80-slide program of overall HMP effort planning FY78 project work	$ 50
1 - Portable display depicting project work maps, photos, unique features of plan	100
	$150

COSTS (Continued)

Publications

2 - Separate Fact Sheet (2-4 pages)		$300
Publication of entire Habitat Management Plan in loose leaf binder form, with photos, maps, etc.		$500
Abstract version publications of the Habitat Plan wildlife species list.		$200
	SUBTOTAL:	$1,000

	$1,000
	+ 150
TOTAL:	$1,150

Man Months

A.O. FY 78, Public Affairs = 1/2 MM	$200
S.O. FY 78, Public Affairs	

Travel

RATIONALE FOR EDUCATION EFFORT

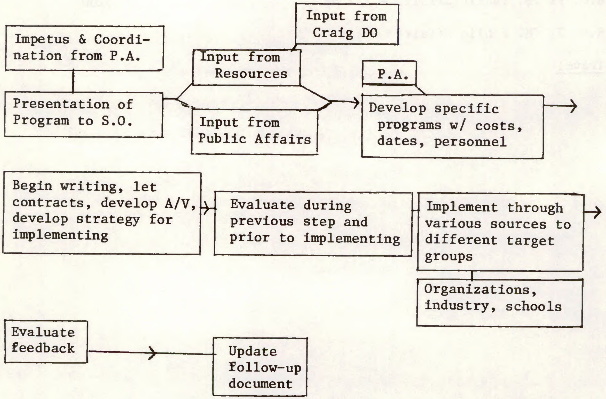
Aids in understanding of those affected by or concerned with wildlife/ resource development.

Aids in decision-making by management by considering feedback received in operation of program.

Overall program is a series of short-term goals/objectives leading to a long-term objective: quality public lands management.

Program doesn't cost--it pays.

HOW WILL IT BE HANDLED?


Impetus & Coordination from P.A.
Presentation of Program to S.O.
Input from Craig DO
Input from Resources
Input from Public Affairs
P.A.
Develop specific programs w/ costs, dates, personnel
Begin writing, let contracts, develop A/V, develop strategy for implementing
Evaluate during previous step and prior to implementing
Implement through various sources to different target groups
Organizations, industry, schools
Evaluate feedback
Update follow-up document

J. Concurrence And Approval

This Habitat Management Plan has been prepared, reviewed and approved for impementation by the undersigned parties. Final approval date shall be that given by the last signee:

Prepared by: Charles J. Cesar 11/30/77
Charles J. Cesar Date
BLM Wildlife Biologist

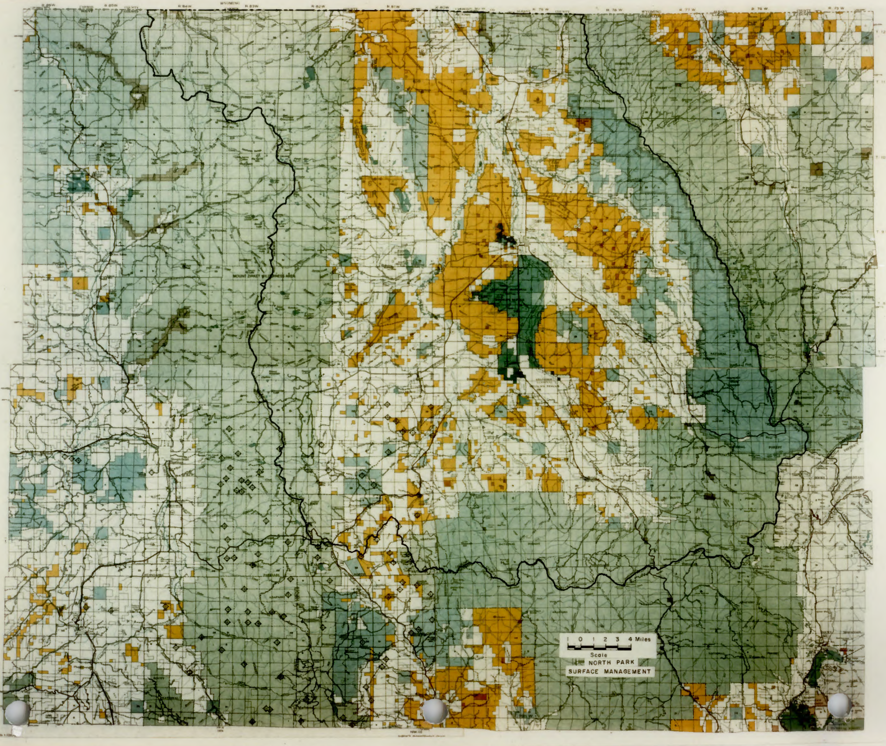
Approved by: Marvin W. Pearson 12-13-77
Marvin W. Pearson Date
District Manager

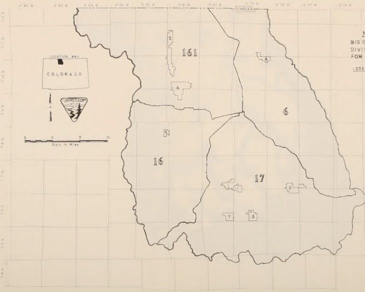
Eugene Cook 12-13-77
Gene Cook Date
Regional Manager
By D. T. Weber
Asst. Reg. MgR.

K. APPENDIX I

Maps of the North Park Habitat Management Plan

Unnumbered Map		Land Status Map
MAP	1	Big Game Management Units and Access Needs
	2	Habitat Types
	3	Elk, Antelope Special Use Areas, Antelope GMU'S
	4	Mule deer winter range, Waterfowl, Shorebird, and Furbearer Habitat
	5	Sage Grouse Special Use Areas, Blue Grouse distribution on Public Lands
	6	Threatened, endangered, sensitive Species Habitat, Proposed Bighorn Sheep and Moose Introduction Sites
	7	Proposed Habitat Improvement Projects
	8	Fisheries Habitat


0 1 2 3 4 Miles
Scale
NORTH PARK
SURFACE MANAGEMENT



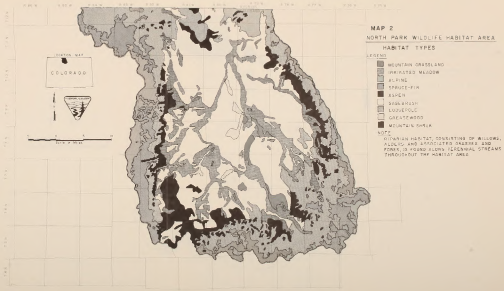
MAP I

NORTH PARK WILDLIFE HABITAT AREA

BIG GAME MANAGEMENT UNITS (COLORADO DIVISION OF WILDLIFE) AND AREAS PROPOSED FOR PUBLIC ACCESS ACQUITION.

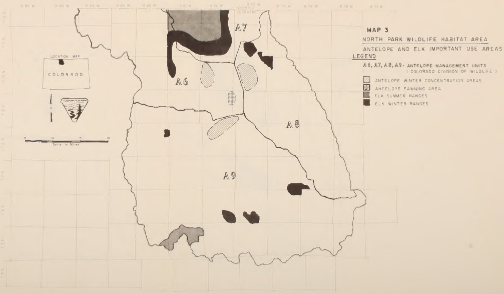
LEGEND

6, 16, 17, 161	BIG GAME MANAGEMENT UNITS
1	HEBRON SLOUGH
2	OWL MOUNTAIN
3	GREEN RIDGE
4	NORTH SAND HILLS
5	BOETTCHER RIDGE
6	SHEEP MOUNTAIN
7	BUFFALO PEAK
8	PITCH PINE MOUNTAIN



MAP 2

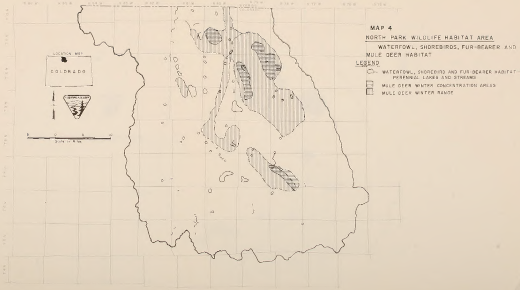
NORTH PARK WILDLIFE HABITAT AREA



MAP 3

NORTH PARK WILDLIFE HABITAT AREA

ANTELOPE AND ELK IMPORTANT USE AREAS



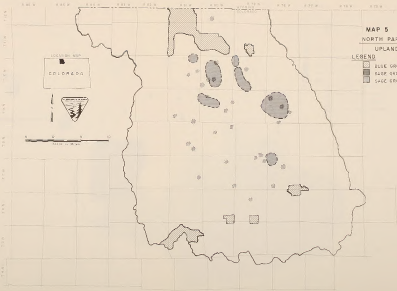
MAP 4

NORTH PARK WILDLIFE HABITAT AREA

WATERFOWL, SHOREBIRDS, FUR-BEARER AND MULE DEER HABITAT

LEGEND

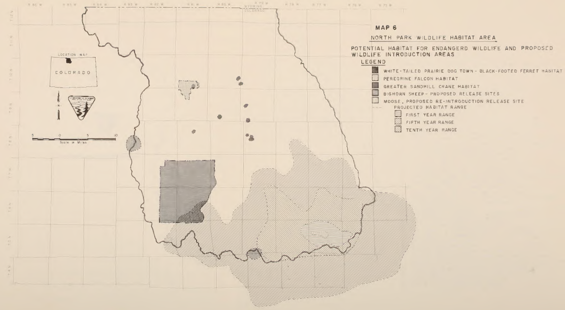
- WATERFOWL, SHOREBIRD AND FUR-BEARER HABITAT– PERENNIAL LAKES AND STREAMS
- ▤ MULE DEER WINTER CONCENTRATION AREAS
- ▥ MULE DEER WINTER RANGE



MAP 5

NORTH PARK WILDLIFE HABITAT AREA

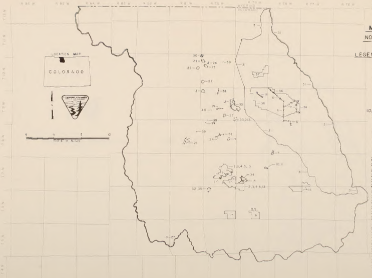
UPLAND GAME HABITAT



MAP 6

NORTH PARK WILDLIFE HABITAT AREA

POTENTIAL HABITAT FOR ENDANGERD WILDLIFE AND PROPOSED WILDLIFE INTRODUCTION AREAS



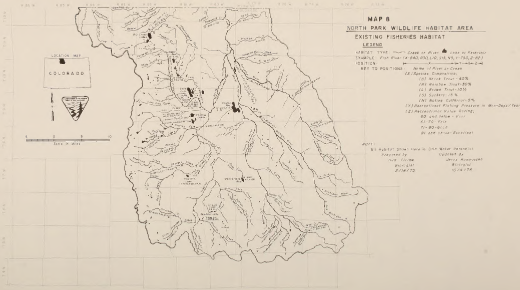
MAP 7

NORTH PARK WILDLIFE HABITAT AREA

PROPOSED HABITAT IMPROVEMENT PROJECT

LEGEND

1 HEBRON WELLS
2 HEBRON ISLANDS
3 HEBRON WATER DIVERSION GATE INSTALLATIONS
4 HEBRON RESERVOIR CONSTRUCTION
5 HEBRON RESERVOIR PROTECTIVE FENCES
6 SUDDUTH FENCE MODIFICATION
7 SPRING CREEK PROJECT
8 ALKALI LAKE PROJECT
9 ANTELOPE SPRING PROJECT
10,11 DEER CREEK RROJECT
12 WALDEN RESERVOIR PROTECTIVE FENCE
13 HEBRON SLOUGH FENCE MODIFICATION
14 MAC FARLANE RESERVOIR PROTECTIVE FENCE AND SEEDING
15 OWL MOUNTAIN PATCHCUTS AND SEEDING
16 GREEN RIDGE PATCHCUTS AND SEEDING
17 BUFFALO PEAK PATCHCUTS AND SEEDING
18 LEE DRAW PIPELINE AND TANKS
19 ANTELOPE WELL NO.1 PIPELINE AND TANKS
20 CASE SPRING WET MEADOW PROTECTIVE FENCE AND BURN
21 MANVILLE DRAW WET MEADOW PROJECT
21A-CASE SPRING WET MEADOW EXPANSION DIKE
22 SAGE GROUSE STRUTTING GROUND CLOSURES
23 GREEN SPRING PROTECTIVE FENCE, PIPELINE AND TANK
24 PETERSON RIDGE PIPELINE AND TANK
25 CALIFORNIA 17 PROJECT
26 CALIFORNIA 7 RETENTION RESERVOIR REPAIR
27 GRIZZLY POND RROTECTIVE FENCE
28 FISH HATCHERY FENCE MODIFICATION
29 CALIFORNIA 7 RESERVOIR RROTECTIVE FENCE
30 CALIFORNIA 6 RESERVOIR PROTECTIVE FENCE
31 AB FENCE MODIFICATION
32 DAMFINO RESERVOIR 1 AND 2 PROTECTIVE FENCE
33 WALDEN RESERVOIR GOOSE NESTING PLATFORMS
34 MACFARLANE RESERVOIR GOOSE NESTING RLATFORMS
35 DAMFINO RESERVOIRS 1 AND 2 GOOSE NESTING PLATFORMS
36 NORTH McCALLUM ROAD AND TRAIL REHABILITATION
37 BATTLEMENT ROAD AND TRAIL REHABILITATION
38 NORTH PLATTE FENCE MODIFICATION
39 NORTH PLATTE RIVER BOAT RAMPS



MAP 8

NORTH PARK WILDLIFE HABITAT AREA

EXISTING FISHERIES HABITAT

NOTE:
All Habitat Shown Here is Cold Water Perennial

Prepared by
Bud Tillow
Biologist
2/18/75

Updated by
Jerry Rasmussen
Biologist
10/4/76

APPENDIX II

SCIENTIFIC PLANT NAMES

Abbreviation	Scientific Name	Common Name
Carex	Carex spp.	Sedge
Febr	Festuca brachyphylla	Alpine fescue
Anten	Antennaria spp.	Pussytoes
Pico	Pinus contorta	Lodgepole pine
Psme	Pseudotsuga menziesii	Douglas-fir
Pien	Picea engelmannii	Engelmann spruce
Abla	Abies lasiocarpa	Subalpine fir
Potr	Populus tremuloides	Quaking Aspen
Stipa	Stipa Spp.	Needlegrass
Agsp	Agropyron spicatum	Bluebunch wheatgrass
Poa	Poa spp.	Bluegrass
Koer	Koeleria cristata	Junegrass
Artr	Artemisia tridentata	Big sagebrush
Chrys	Chrysothamnus spp.	Rabbitbrush
Cemo	Cercocarpus montanus	Mountain mahogany
Amal	Amelanchier alnifolia	Serviceberry
Putr	Purshia tridentata	Bitterbrush
Symph	Symphoricarpos spp.	Snowberry
Sare	Sarcobatus vermiculatus	Greasewood
Bromus	Bromus spp.	Bromegrass
Phleum	Phleum	Timothy
Trifo	Trifolium spp.	Clover
Juncus	Juncus spp.	Rush
Deca	Deschampsia caespitosa	Tufted hairgrass
Salix	Salix spp.	Willow

APPENDIX III

List of lands recommended for acquisiton to mitigate habitat losses to energy-related developments.

PRIORITY	SPECIES BENEFITING	LAND AREA
1	Mule deer, antelope, sage grouse, non-game birds and mammals	Township 7 North, Range 78 West
		Sec. 19 - 160 acres
		Sec. 20 - 320 acres
		Sec. 21 - 640 acres
		Sec. 28 - 640 acres
		Sec. 29 - 200 acres
		Sec. 33 - 440 acres
		Sec. 34 - 480 acres
		Sec. 13 - 120 acres
2	Mule deer, elk	Township 11 North, Range 79 West
		Sec. 26 - 640 acres
		Sec. 35 - 360 acres
		Township 10 North, Range 79 West
		Sec. 1 - 240 acres
		Sec. 12 - 480 acres
		Sec. 24 - 280 acres
		Township 10 North, Range 78 West
		Sec. 6 - 80 acres
		Sec. 7 - 360 acres
		Sec. 17 - 120 acres
		Sec. 18 - 560 acres
		Sec. 19 - 360 acres
3	Mule Deer	Township 11 North, Range 81 West
		Sec. 15 - 80 acres
		Sec. 16 - 640 acres
		Sec. 21 - 640 acres
		Sec. 22 - 640 acres
		Sec. 26 - 640 acres
		Sec. 27 - 640 acres

		Township 11 North, Range 80 West Sec. 15 - 480 acres Sec. 26 - 560 acres Sec. 27 - 440 acres Sec. 35 - 120 acres Sec. 36 - 640 acres Township 7 North Range 79 West Sec. 31 - 400 acres
4	Mule Deer	Township 11 North, Range 80 West Sec. 17 - 160 acres Sec. 14 - 400 acres Sec. 28 - 40 acres Sec. 33 - 120 acres Sec. 34 - 280 acres Sec. 35 - 140 acres
5	Antelope, Sage Grouse	Township 10 North, Range 79 West Sec. 2 - 560 acres Sec. 3 - 560 acres Sec. 9 - 400 acres Sec. 10 - 360 acres Sec. 11 - 640 acres Sec. 12 - 480 acres Sec. 13 - 480 acres Sec. 14 - 560 acres Sec. 15 - 440 acres Sec. 17 - 120 acres Sec. 18 - 80 acres Sec. 20 - 360 acres Sec. 21 - 640 acres Sec. 27 - 400 acres Sec. 28 - 360 acres Sec. 29 - 120 acres Township 10 North, Range 80 West Sec. 3 - 320 acres Sec. 9 - 640 acres Sec. 10 - 40 acres Sec. 15 - 120 acres Sec. 22 - 120 acres Sec. 25 - 240 acres Sec. 26 - 200 acres Sec. 27 - 400 acres Sec. 28 - 440 acres Sec. 33 - 440 acres

Township 9 North, Range 80 West
Sec. 2 - 600 acres
Sec. 3 - 240 acres
Sec. 16 - 320 acres
Sec. 21 - 120 acres
Sec. 25 - 360 acres

Township 8 North, Range 80 West
Sec. 2 - 640 acres
Sec. 10 - 320 acres

6 Waterfowl/Shorebirds

Township 7 North, Range 80 West
Sec. 14 - 400 acres
Sec. 15 - 440 acres
Sec. 22 - 80 acres
Sec. 23 - 40 acres
Sec. 24 - 400 acres
Sec. 25 - 360 acres

7 Threatened/Endangered

Township 9 North, Range 81 West
Sec. 5 - 120 acres
Sec. 3 - 120 acres
Sec. 8 - 100 acres
Sec. 9 - 120 acres
Sec. 10 - 640 acres
Sec. 15 - 640 acres
Sec. 16 - 320 acres
Sec. 22 - 320 acres

APPENDIX IV

Priority Listing of Proposed Projects and Studies

1. Hebron Wells
2. Hebron Islands
3. Hebron Water Diversion Gate Installation
4. Hebron Reservoir Construction
5. Hebron Reservoirs Protective Fencing
6. Sensitive, Threatened, Endangered Species Inventory
7. Riparian Habitat and Minimum Stream Flow Study
8. Big Game Winter Range Inventory
9. Sudduth Fence Modification
10. Baseline Invertebrate and Water Quality Study
11. Spring Creek Project
12. Sage Grouse Special Use Area Inventory
13. Interstate Antelope Movement Study
14. Alkali Lake Shorebird Habitat Study and Projects
15. Antelope Spring Project
16. Deer Creek Project
17. Furbearer Habitat and Population Status Inventory
18. Minimum Reservoir Draw-down Levels for Potential Fishing Reservoirs
19. Walden Reservoir Protective Fence and Seeding
20. Hebron Slough Fence Modification
21. MacFarlane Reservoir Protective Fence and Seeding
22. Owl Mountain Patch Cuts and Seeding
23. Green Ridge Patch Cuts and Seeding
24. Buffalo Peak Patch Cuts and Seeding
25. Lee Draw Pipeline and Tanks
26. Antelope Well #1 Pipeline and Tank
27. Case Spring Wet Meadow Protective Fence and Burn
28. Case Spring Wet Meadow Expansion Dike

28a. Manville Draw Project

29. Green Spring Protective Fence, Pipeline and Tank
30. Peterson Ridge Pipeline and Tank
31. California 17 Spring Wet Meadow Protective Fence, Pipeline, Stock Ta
32. California 7 Retention Reservoir Repair
33. Grizzly Pond Protective Fence
34. Fish Hatchery Fence Modification
35. California 7 Reservoir Protective Fence
36. California 6 Reservoir Protective Fence
37. A 8 Fence Modification
38. Damfino Reservoir 1 and 2 Protective Fence
39. Walden Reservoir Goose Nesting Platforms
40. MacFarlane Reservoir Goose Nesting Platforms

41. Damfino Reservoir 1 and 2 Goose Nesting Platforms
42. North McCallum Road and Trail Rehabilitation
43. Battlement Road and Trail Rehabilitation
44. North Platte Fence Modification
45. Sage Grouse Strutting Ground Road Closures, Signs and Observation Sig
46. Boat Ramps on North Platte River.

APPENDIX V

North Park HMP Species List

Mammals, Most Primitive to Most Advanced

Shrews

Water shrew (*Sorex palustris*)
Vagrant shrew (*S. vagrans*)
Masked shrew (*S. cinerus*)
Merriam's shrew (*S. merriami*)
Dwarf shrew (*S. nanus*)

Bats

Townsend's big-eared bat(*Plecotus townsendii*)
Silver-haired bat (*Lasionycteris noctivagans*)
Big brown bat (*Eptesicus fuscus*)
Long-eared myotis (*Myotis evotis*)
Little brown myotis (*M. lucifugus*)
Long-legged myotis (*M. volans*)
Small-footed myotis (*M. subulatus*)
Hoary bat (*Laisiurns cinereus*)

Rabbits and Their Allies

*Pika (*Ochotona princeps*)
Snowshoe hare (*Lepus americanus*)
White-tailed jack rabbit (*L. townsendii*)
Nuttall's cottontail (*Sylvilagus nuttallii*)

Rodents

Yellow-bellied marmot (*Marmota flaviventris*)
White-tailed prairie dog (*Cynomys leucurus*)
Richardson's ground squirrel (*Spermophilus richardsonii*)
Thirteen-lined ground squirrel (*S. tridecemlineatus*)
Golden-mantled ground squirrel (*S. lateralis*)
Least chipmunk (*Eutamius minimus*)
Uinta chipmunk (*E. umbrinus*)
Red squirrel (*Tamiasciurus hudsonicus*)
Northern pocket gopher (*Thomonys talpoides*)
Beaver (*Castor canadensis*)
Deer mouse (*Peromyscus maniculatus*)
Northern grasshopper mouse (*Onyehomys lencogaster*)
Bushy-tailed wood rat (*Neotoma cinerea*)
*Gapper's red-backed vole (*Clethrionomys gapperi*)
Heather vole (*Phenacomys intermedius*)
Montane vole (*Microtus montanus*)

Long-tailed vole (M. longicandus)
* Sagebrush vole (Lagurus curtalus)
Muskrat (Ondatra zibethicus)
House mouse (Mus musculus)
Western jumping mouse (Zapus princeps)
Porcupine (Erethizon dorsatum)

Carnivores

Coyote (Canis latrans)
*Gray wolf (C. lupus)
Red fox (Vulpes fulva)
Black bear (Ursus americanus)
Marten (Martes americana)
Ermine (Mustela erminea)
Long-tailed weasel (M. frenata)
Mink (M. vison)
*Wolverine (Gulo luscus)
American badger (Taxidea taxus)
Striped skunk (Mephitis mephitis)
*River otter (Lutra canadensis)
* Mountain lion (Felis concolor)
Lynx (Lynx canadensis)
* Bobcat (L. rufus)

Large Herbivores

Elk (Cervus canadensis)
Mule deer (Odocoileus hemionus)
Moose (Alces alces)
Antelope (Antilocarpa americana)
Mountain sheep (Ovis canadensis)

Birds, Most Primitive to Most Advanced

Grebes

Western grebe (Aechmophorus occidentalis)
Eared grebe (Podiceps caspicus)
Pied-billed grebe (Podilymbus podiceps)

Pelicans

*White pelican (Pelecanus erythrorhynchos)

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* Endangered, presence in North Park is doubtful.
Endangered, according to Colorado Wildlife Commission.

Herons and Their Allies

Great blue heron (*Ardea* *herodias*)
Snowy egret (*Leucophoyx* *thula*)
Black-crowned night heron (*Nycticorax* *nycticorax*)
Yellow-crowned night heron (*Nyctanassa* *violacea*)
American bittern (*Botaurus* *lentiginosus*)

Ibises

White-faced ibis (*Plegadis* *chihi*)

Ducks and Geese

Whistling swan (*Olor* *columbianus*)
Canada goose (*Branta* *canadensis*)
Mallard (*Anas* *platyrhynchos*)
Gadwall (*A*. *strepera*)
Pintail (*A*. *acuta*)
Green-winged teal (*A*. *carolinensis*)
Blue-winged teal (*A*. *discors*)
Cinnamon teal (*A*. *cyanoptera*)
American widgeon (*Mareca* *americana*)
Shoveler (*Spatula* *clypeata*)
Redhead (*Aytha* *americana*)
Ring-necked duck (*A*. *collaris*)
Canvasback (*A*. *valisineria*)
Lesser scaup (*A*. *affinis*)
Common goldeneye (*Bucephala* *clangula*)
Buffalohead (*B*. *albeola*)
Ruddy duck (*Oxyura* *jamaicensis*)
Common merganser (*Mergus* *merganser*)

Falcons, Hawks, and Vultures

Turkey vulture (*Cathartes* *aura*)
Red-tailed hawk (*Buteo* *jamaicensis*)
Swainson's hawk (*B*. *swainsoni*)
Rough-legged hawk (*B*. *lagopus*)
Ferruginous hawk (*B*. *regalis*)
Golden eagle (*Aguila* *chrysaetos*)
Bald eagle (*Haliaeetus* *leucocephalus*)
Goshawk (*Accipiter* *gentilis*)
Cooper's hawk (*A*. *cooperii*)
Sharp-shinned hawk (*A*. *striatus*)
Marsh hawk (*Circus* *cyaneus*)
Osprey (*Pandion* *haliateus*)
Prairie falcon (*Falco* *mexicanus*)
* Peregrine falcon (*F*. *peregrinus*)

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* Endangered, presence in North Park is uncommon.
Endangered, according to Colorado Wildlife Commission.

Merlin (F. columbarius)
Kestrel (F. sparverius)

Gallinaceous Birds

Blue grouse (Dendragapus obscurus)
Sage grouse (Centrocercus urophasianus)

Cranes and Their Allies

*Greater sandhill crane (Grus canadensis)
Virginia rail (Rallus limicola)
Sora (Porzana carolina)
American coot (Fulica americana)

Shorebirds

Killdeer (Charadrius vociferus)
Common snipe (Capella gallinago)
Long-billed curlew (Numenius americanus)
Spotted sandpiper (Actitis macularia)
Willet (Catoptrophorus semipalmatus)
Greater yellowlegs (Totanus melanolecus)
Lesser yellowlegs (T. flaripes)
Least sandpiper (Erolia minutilla)
Long-billed dowitcher (Limnodromus scolopaceus)
Western sandpiper (Ereunetes mauri)
American Avocet (Recurvirostra americana)
Wilson's phalarope (Steganopus tricolor)
California gull (Larus californicus)
Franklin's gull (L. pipixcan)
Bonaparte's gull (L. philadelphia)
Forester's tern (Sterna foresteri)
Black tern (Chlidonias niger)

Doves and Pigeons

Mourning dove (Zenaidura macroura)

Owls

Great horned owl (Burbo virginianus)
Burrowing owl (Speotyto cunicularia)
Short-eared owl (Asio flammeus)
Saw-whet owl (Aegolius acadicus)

Goatsuckers

Common nighthawk (Chordeiles minor)

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* Endangered, according to Colorado Wildlife Commission.

Hummingbirds

Broadtailed hummingbird (*Selasphorus platycercus*)
Rufous hummingbird (*S. rufus*)

Kingfishers

Belted kingfisher (*Megaceryle alcyon*)

Woodpeckers

Common flicker (*Caloptes sp*.)
Hairy woodpecker (*Dendrocopos villosus*)
Downy woodpecker (*D. pubescens*)

Perching Birds

Eastern kingbird (*Tyrannus tyrannus*)
Western kingbird (*Tyrannus verticalis*)
Say's phoebe (*Sayornis saya*)
Traill's flycatcher (*Empidonax traillii*)
Western wood pewee (*Contopus sordidulus*)
Horned lark (*Eremophila alpestris*)
Violet-green swallow (*Tachycineta thalassina*)
Tree swallow (*Indoprocne bicolor*)
Bank swallow (*Riparia riparia*)
Barn swallow (*Hirundo rustica*)
Cliff swallow (*Petrochelidon pyrrhonota*)
Gray jay (*Perisoreus canadensis*)
Stellar's jay (*Cyanocitta stelleri*)
Black-billed magpie (*Pica pica*)
Common raven (*Corvus corax*)
Common crow (*C. brachyrhynchos*)
Clark's nutcracker (*Nucifraga columbiana*)
Black-capped chickadee (*Parus atricapillus*)
Mountain chickadee (*Parus gambeli*)
Dipper (*Cinclus mexicanus*)
House wren (*Troglodytes aedon*)
Long-billed marsh wren (*Telmatodytes palustris*)
Rock wren (*Salpinctes obsoletus*)
Mockingbird (*Mimus polyglottos*)
Catbird (*Dumetella carolinensis*)
Brown thrasher (*Toxostoma rufum*)
Sage thrasher (*Oreoscoptes montanus*)
American robin (*Turdus migratorius*)
Swainson's thrush (*Hylocichla fuscescens*)
Eastern bluebird (*Sialia sialis*)
Western bluebird (*S. mexicana*)
Mountain bluebird (*S. currocoides*)
Cedar waxwing (*Bombycilla cedrorum*)

Loggerhead shrike (Lanius ludovicianus)
Starling (Sturnus vulgaris)
Yellow warbler (Dendroica petechia)
Audubon's warbler (Dendroica auduboni)
Wilson's warbler (Wilsonia pusilla)
House sparrow (Passer domesticus)
Western meadowlark (Sturnella neglecta)
Yellow-headed blackbird (Xanthocephalus xanthocephalus)
Red-winged blackbird (Agelaius phoenicius)
Brewar's blackbird (Euphagus cyanocephalus)
Common grackle (Quiscalus quiscalus)
Brown-headed cowbird (Molothrus ater)
Western tanager (Piranga ludoviciana)
Black-headed grosbeak (Pheucticus melanocephalus)
House finch (Carpodocus mexicanus)
Gray-crowned rosy finch (Lencosticte tephrocotis)
Black rosy finch (L. atrata)
Brown-capped rosy finch (L. australis)
Pine siskin (Spinus pinus)
American goldfinch (S. tristis)
Green-tailed towhee (Chlorura chlorura)
Rufous-sided towhee (Pipilo erythrophthalmus)
Lark bunting (Calamospiza melanocorys)
Savannah sparrow (Passerculus sandwichensis)
Vesper sparrow (Pooecetes grumineus)
Lark sparrow (Chondestes grammacus)
Rufous-crowned sparrow (Aimophila cassinii)
Sage sparrow (Amphispiza belli)
Dark-eyed junco (Junco hyemalis)
Gray-headed junco (J. caniceps)
Chipping sparrow (Spizella passerina)
Field sparrow (S. pusilla)
Brewer's sparrow (S. breweri)
White-crowned sparrow (Zonotrichia leucophrys)
Song sparrow (Melospiza melodia)
McCown's sparrow (Rhynchopanes McCownii)
Lapland longspur (Calcarius lapponicus)
Chestnut-collared longspur (C. ornatus)
Snow bunting (Plectrophenax nivalis)

Amphibians

Tiger Salamander (Ambystoma tigrinum)
Boreal toad (Bufo boreas)
Chrous frog (Pseudacris triseriata)
Western leopard frog (Rana pipiens)

Reptiles

Wandering garter snake (Thamnophis elegans)
Utah milk snake (Lampropeltis doliata)

APPENDIX VI

EAR'S WRITTEN WITHIN THE HMP AREA

	NAME	REVIEWED BY	DATE APPROVED NUMBER
1.	Independence Mtn. Forest		
	Big Creek Timber Sale	State Office	1975 05-010-5-92
	Independence Pole Sale	District Office	1976 CO-010-6-179
2.	Bull Mtn. Timber Sale	District Office	1972 NP-73-26
3.	Buffalo Peak Timber Sale	District Office	1973 01-74-7
4.	North Sandhills Natural Area	District Office	1976 CO-010-6-215
5.	Arapahoe Wildlife Refuge Withdrawal (C-12610)	State Office	1976, September
6.	Case Spring Development	District Office	1976, August
7.	North Park Oil & Gas Umbrella EAR	State Office	1975 CO-010-6-83
8.	Others (FUPs, TUPs, RIPs, etc.)	District Office var.	See District files
9.	Coal Exploration & Development (Identified, not started)	Washington Office	

APPENDIX VII

Hebron Slough Project Plan

I. INTRODUCTION

The Bureau of Land Management and the Colorado Division of Wildlife entered into a cooperative agreement during June 1977 to establish a wildlife habitat improvement for the area known as the Hebron Slough. The proposed development will improve habitat for waterfowl, shorebirds and all other wildlife species endemic to the Hebron Slough area and provide dependable season long water for livestock. A copy of the cooperative agreement is attached to this document.

The Division of Wildlife has deposited $70,028.02 into the Bureau's contributive fund account to be expended by the Bureau toward the completion of the wildlife habitat improvement work specified herein. Bureau funding will be used to supplement the above amount as the contributed fund is expended.

II. PURPOSE:

This document defines the long term objectives of the Hebron Slough habitat improvement project as listed below and the time frames needed in reaching the objectives. Table 1 summarizes the projected time frame for implementation and cost of the proposed development projects:

(1) Create a dependable nesting, brood rearing and resting habitat for waterfowl and shorebirds on 3,000 acres of public land by 1981. Mean production increases by year include: (a) 1,000 ducks; (b) 50 Canada geese; (c) variable shorebirds.

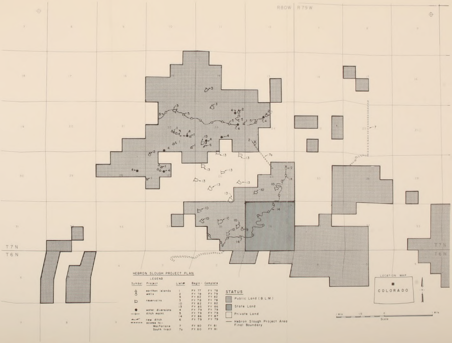
(2) Maintain the Hebron Slough area as a discrete ecological unit for all wildlife species with priority given to aquatic, riparian and wetland habitat.

(3) Obtain public access to MacFarlane Reservoir and south tract of the Hebron Slough project area by 1981.

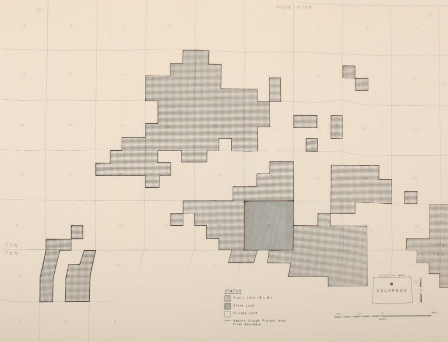
(4) If the initial project development is deemed a success by 1981, expand the Hebron Slough area by land acquisition and habitat development into a 7,700 acre unit by 1990. This includes acquisition of 1,160 acres of immediate private lands. Management of an additional 840 acres of state and private lands will be controlled by cooperative agreement and/or exchange.

(5) Provide suitable aquatic habitat in MacFarlane Reservoir to annually support 20,000 trout and 16,000 fisherman days by 1985.

(6) Implement a non-continuous livestock grazing system on the total Hebron Slough project area consistent with the proposed aquatic, riparian and wetland habitat improvement objectives by 1984. The grazing system will be developed in conjunction with the North Park Planning Unit Grazing Environmental Statement.



HEBRON SLOUGH PROJECT PLAN


R80W
R79W
T7N
T6N
STATUS
▨ Public Land (B.L.M.)
■ State Land
☐ Private Land
— Hebron Slough Project Area Final Boundary
LOCATION MAP
COLORADO
N
1 Mile
1/2
0
1 Mile
Scale

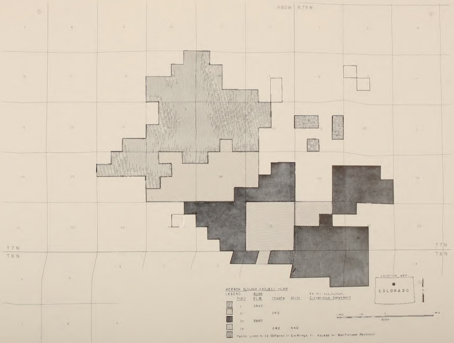

R80W
R79W
T7N
T6N
HEBRON SLOUGH PROJECT PLAN
LEGEND
Acres
Tract
BLM
Private
State
FY for Acquisition,
Cooperative Agreement
▥ I 2840
▧ II 1160
■ III 2880
▨ IV 240 640
▦ Public Land to be Offered in Exchange for Access to MacFarlane Reservoir
LOCATION MAP
COLORADO
N
1 Mile
1/2
0
1 Mile
Scale

TABLE 1
SUMMARY LISTING OF PROPOSED HEBRON SLOUGH HABITAT IMPROVEMENT PROJECTS

	Projects Needed		Administrative Needs			
Priority Objectives	List #	Costs 1/	List #	Costs	Year Begin	Year Completed
(1) Create a dependable nesting, brood rearing and resting habitat for waterfowl and shorebirds on 3,000 acres of public land by 1981. Mean production increases by year include: (a) 1,000 ducks; (b) 50 geese; (c) variable shorebirds.	(1) Construct 14 earthen islands	$1,800	(1) Engineering	½ m/m	FY 77	FY 78
	(2) Construct 4 wells	$120,000	(2) Engineering contract administration	5 m/m	FY 78	FY 79
	(3) Construct 4 reservoirs	$20,000	(3) Engineering contract administration	2 m/m	FY 78	FY 78
(2) Maintain the Hebron Slough as a discrete ecological unit for all wildlife species endemic to the project area, with priority given to aquatic, riparian and wetland habitat.	(4) 10 water diversion gates and installation	$5,000	(4) Engineering contract administration	1½ m/m	FY 79	FY 79
	(5) Ditch maintenance	$3,000	(5) Engineering, lands work	1 m/m	FY 79	FY 79
	(6) Net ditch construction	$2,500	(6) Engineering	1 m/m	FY 79	FY 79
(3) Obtain legal access to MacFarlane Reservoir and the south tract (Tract II) of the Hebron Slough by 1981.	(7) No projects needed	--	(7) Exchange, cooperative agreement, easement; realty work with private landowner	5 m/m $2,500	FY 80	FY 81
	(8) Evaluation	1 m/m	(8) None needed	--	FY 80	FY 81

	Projects Needed		Administrative Needs			
Priority Objectives	List #	Costs 1/	List #	Costs	Year Begin	Year Completed
(4) If the initial project development is deemed a success by 1981, expand the Hebron Slough area by land acquisition and habitat development into a 7,700 acre unit by 1990.	(9) Construct 3 wells		(9) Engineering, contract administration, writing	4 m/m	FY 82	FY 82
	(10) Construct 7 reservoirs		(10) Engineering, contract administration	2 m/m	FY 82	FY 82
	(11) Acquisition of 1160 acres of private land by exchange or purchase		(11) Exchange, purchase, cooperative agreement processing		FY 83	FY 84
	(12) Management of an additional 840 acres of state and private land.		(12) Exchange, purchase, cooperative agreement processing			
	(13) Construct 8 reservoirs	$40,000	(13) Engineering, contract administration	2½ m/m	FY 85	FY 86
	(14) 4 miles ditch maintenance	$20,000	(14) Engineering, contract administration	2 m/m	FY 86	FY 87
(5) Provide suitable aquatic habitat in MacFarlane Reservoir to annually support 20,000 trout and 16,000 fisherman days by 1985.	(15) Minimum pool maintenance	None	(15) Negotiations with water owner, cooperative agreement	1 m/m	FY 84	FY 85

	Projects Needed		Administraive Needs			
Priority Objectives	List #	Costs 1/	List #	Costs	Year Begin	Year Completed
(6) Implement a non-continuous livestock grazing system on the total Hebron Slough project area consistent with the proposed aquatic, riparian and wetland habitat improvement objectives by 1984. The grazing system will be developed in conjunction with the North Park Planning Unit Grazing Environmental Statement.	(16) AMP on entire project area	$25,000	(16) AMP development, administration	3 m/m	FY 84	FY 85

1/ Cost estimates beyond FY 78 and FY 79 are subject to refinement.

III. PROJECT AREA:

The proposed Hebron Slough development area is located approximately thirteen miles south of Walden, Colorado, in Townships 6 and 7 North, Ranges 79 and 80 West, Jackson County, Colorado. The project area is located in the bottom of an inland basin that is seasonally flooded in years of normal annual precipitation. Irrigation waste water draining from surrounding areas also supplies water to the area. The Hebron Slough area contains approximately twenty natural ponds that collect and retain water during the spring and into the summer.

MacFarlane Reservoir lies east of the project area and is approximately 250 acres in size. MacFarlane impounds water taken from the Illinois River via Soap Creek. Water from MacFarlane is used to irrigate native hay meadows and pastures located north and west of the reservoir.

Elevation of the area varies from 8160 feet to 8236 feet with topographic slopes from zero to five percent. The soil type in the basin lowlands is a spicerton sandy loam. Soil profile shows a surface of about two inches of pale brown sandy loam. The subsoil is brown clay about ten inches thick, overlaying a brown clay. Permeability in this soil is slow and normal plant growth is inhibited by high alkalinity.

The mean annual precipitation in the Hebron Slough area is ten to twelve inches. The mean annual air temperature is 36 to 38° F, and the frost-free growing season is 30 to 40 days.

The Hebron Slough area could be underlain by coal deposits now being studied by USGS. One coal lease currently exists northwest of the project area; however, no interest has been expressed in mining the coal. The 1977 North Park Management Framework Plan (MFP) Update excludes coal leasing from the project area.

Human use of the area is presently limited to occasional wildlife hunters, photographers, or viewers. Jackson County Road 34 provides public access through the area.

Wildlife inhabitants of the project area include antelope, mule deer, waterfowl, shorebirds, sage grouse and a variety of non-game birds and mammals. There are no threatened or endangered species known to inhabit the area; however, peregrine falcons and greater sandhill cranes have been observed adjacent to the project area. There is no habitat critical to threatened or endangered species within the project area. The North Park Unit Resource Analysis (URA) contains a detailed list of wildlife species endemic to the project area.

The vegetative community associated with the proposed projects is dominated by big sagebrush, black greasewood, and alkali salt rush. Understory vegetation includes western wheatgrass, saltgrass, alkali bluegrass, alkali grass and various rushes.

Public land lies in two contiguous, separate tracts separated by a strip of private land (see Map 1). The project area is separated into four tracts as shown in Table 2.

TABLE 2

LAND STATUS AND ACREAGES BY TRACT WITHIN THE PROPOSED HEBRON SLOUGH PROJECT AREA

	Public Land	Private Land	State Land
Tract I	2,840	--	--
Tract II	--	1,160	--
Tract III	2,880	--	--
Tract IV	--	240	640
TOTAL ACRES	5,720	1,400	640

The north tract, Tract I, contains 2,840 acres of contiguous public land with public access available from Jackson County Road 34. The south tract, Tract III, contains 2,880 acres of somewhat contiguous public land with no public access available. A section of state land separates the south tract into two tracts. Four small public land tracts, 40 to 80 acres in size, lie east of the north tract. The Hebron Slough project base map depicts the land pattern and layout.

Habitat improvement projects will be directed to developing the north tract (Tract I). This tract has the best potential for development because of the natural pothole and drainage locations as well as existing man-made ditches and public access. Development of the south tract (Tract III) will be contingent upon the success of the north tract development and the availability of habitat improvement funds and public access. Tract IV will finalize the Hebron project and "block up" the area.

IV. IMPLEMENTATION:

The remainder of this report is a summation of the habitat improvement projects proposed for the Hebron Slough area. These projects are categorized according to the fiscal year each project is scheduled for implementation.

Fiscal Year 77-78:

Fourteen earthen islands were constructed within nine of the natural potholes occurring in the north tract (see Map 1). These islands were constructed to improve brooding, nesting and loafing habitat for a variety of shorebirds and waterfowl species. The proposed islands vary in size from a five foot by ten foot top to a ten foot by thirty foot top. The sides of the islands are constructed at a 6:1 slope and island heights vary from four to six feet. The proposed island dimensions assure three feet of freeboard above high water line during periods of maximum water capacity in the reservoirs. Earthen material for the proposed islands were obtained from the bottoms of the potholes where the islands were constructed. The material was gathered adjacent to the island locations by a bulldozer and pushed into mounds. A channel created by earth removal remain around the islands. The past summer's drought conditions have left most potholes dry. Soil moisture conditions were favorable for heavy equipment operation within the potholes designated for development.

Fiscal Year 1978:

Four wells and four water retention reservoirs are scheduled for construction during FY 1978. The proposed wells are the priority habitat improvement projects associated with achieving dependable acquatic, wetland and riparian habitat in the Hebron Slough area. The wells will provide a guaranteed annual source of available water to the project area. The well water will be used to fill the existing potholes as well as four proposed reservoirs. Water in the potholes and reservoirs will permit permanent aquatic and semi-aquatic vegetation to establish as well as provide shorebirds and waterfowl with protection from predators. Natural drainages will be used to convey the water to the potholes and reservoirs.

Each of the proposed wells will be designed to provide 1,000 to 2,000 gallons of water per minute. A maximum of approximately 700 acre feet of water will be provided annually from all four wells. Electrical power will be necessary to pump the wells and will be obtained from an existing power line located along Jackson County 34. Map 2 shows location of the proposed wells.

The Colorado Division of Wildlife, Northeast Region, has agreed to make application for permits to drill the four proposed wells. Application will be made with the Colorado Division of Water Resources, Steamboat Springs, Colorado. The Division of Wildlife (DOW) will provide the information and requirements necessary for legal application to drill the wells. The U. S. Department of Justice will file on the proposed wells for the Bureau of Land Management after the wells are established.

Four earthen reservoirs are also proposed for construction in FY 78. These reservoirs will be constructed in natural drainages and each will contain a structure to facilitate drainage. These reservoirs will retain water from runoff and waste irrigation and will be supplemented by water from the proposed wells.

The reservoirs will provide additional loafing water, feeding areas, and nesting cover for waterfowl and shorebirds. Map 2 shows the location of the proposed reservoirs. The reservoirs will also provide a dependable source of livestock water.

Fiscal Year 1979:

Ten water diversion gates are proposed for construction in FY 79. These gates will control the direction and destination of water flow to the potholes and reservoirs throughout the north tract of the Hebron Slough. The gates will be placed in five natural drainages and two man-made ditches. Map 2 shows the locations of these structures.

Two man-made ditches are scheduled for upgrading and diversion gate installation (Map 2). These ditches were constructed by private landowners to carry irrigation water to hay fields adjacent to the Hebron Slough area. The ditches will be upgraded to facilitate water conveyance from the proposed wells to the potholes and reservoirs. The landowners holding the ditch rights-of-way will be contacted prior to the upgrading to assure their compliance with BLM's use of the ditches. Ditch use schedules can be established with the right-of-way holders to avoid conflicting uses of the ditches.

Map 2 also shows the location of two proposed ditches, each approximately one-quarter mile in length. These ditches will aid in the distribution of water from the proposed wells. The ditches are necessary in order to get maximum utilization of the available water. Table 3 summarizes the habitat improvement acreages projected to result from the proposed projects.

TABLE 3

RELATIONSHIP OF PROPOSED HEBRON SLOUGH PROJECTS TO PROJECTED ACRES OF AQUATIC, RIPARIAN AND WETLAND HABITAT IMPROVEMENT 1/

Project #	Completion Date	Acres of Aquatic, Riparian and Wetland Habitat Improvement
1	FY 78	Subtotal (projects 1-6) 1,100 acres
2	FY 79	
3	FY 78	
4	FY 79	
5	FY 79	
6	FY 79	
7	FY 80	320 acres
9	FY 82	Subtotal (projects 9-10) 600 acres
10	FY 82	
11	FY 84	Subtotal (projects 11-14) 600 acres
12	FY 85	
13	FY 86	
14	FY 87	
		TOTAL: 2,620 acres

1/ Does not include expected habitat enhancement through intensive grazing management to be defined by the grazing environmental statement.

Fiscal Year 1980:

Also scheduled is access acquisition to two tracts of BLM land in the Hebron Slough area. Map 2 shows two possible access routes into the southern tract of the project area. Within the southern tract, there is a high potential for developing further waterfowl and shorebird habitat. Public access will also open up this tract of public land for hunting, wildlife viewing and other recreational activities.

Public access is also needed to MacFarlane Reservoir and is proposed for acquisition during FY 80. MacFarlane Reservoir contains approximately 258 surface acres of water at high water line and provides a molting and resting area for hundreds of ducks. This reservoir is especially important during molting season when ducks and geese are flightless. MacFarlane Reservoir is the only large water body in the southern portion of North Park offering safety for waterfowl during the molting season.

Access to MacFarlane Reservoir will provide excellent recreation as well as habitat management opportunities. Map 3 shows three isolated tracts of BLM land totaling 200 acres that will be offered in exchange for public access to the reservoir.

MacFarlane Reservoir has been identified as having potential for development into an excellent trout fishery. Negotiations with the landowner controlling the water in MacFarlane Reservoir could establish a minimum pool level that would sustain a permanent trout fishery. Public access could also provide excellent waterfowl hunting, photography, and viewing opportunities. Some antelope hunting opportunity adjacent to the reservoir would also become available with the access.

Three isolated tracts of public land totaling 200 acres will be offered in exchange for public access to MacFarlane. These tracts are currently leased for livestock grazing to the landowner in control of access to MacFarlane Reservoir. The landowner also owns private lands adjacent to the tracts to be offered in exchange for access. Map 3 shows the public land tracts that will be offered for exchange.

Public access to the south tract of the Hebron Slough area will be acquired this year. Access will be obtained prior to any implementation of habitat improvement projects in this tract. Public access could be obtained from two existing roads as designated on Map 2.

Evaluation to determine the success of the projects will also begin this year. Photo points and brood counts will be conducted to determine nesting success and production as compared to counts made previous to project implementation. Shorebird census will also be conducted to determine species, composition and young production.

Photo points will be established and photographed to monitor nesting and feeding cover change. Aquatic and emergent vegetation will receive special consideration as permanent water is established in the potholes and reservoirs.

Evaluations will continue for the following ten years.

Fiscal Year 1981:

Evaluation to monitor the success of the projects will continue this fiscal year. Other project work is not scheduled for FY 81.

Fiscal Year 1982:

Habitat improvement projects will be directed toward the south tract of the Hebron Slough area during FY 82. The construction of seven reservoirs and three wells is proposed for this year. The reservoirs will provide additional surface water for waterfowl, shorebirds and other species of wildlife as well as a water source for livestock. Each reservoir will be designed to retain ten to twelve surface acres of water and each will contain a structure to facilitate drainage. Islands will be constructed in each reservoir. Aquatic and semi-aquatic vegetation will establish in and adjacent to the reservoirs and will provide feeding, nesting and resting food and cover. Sage grouse brooding habitat will also improve in the drainages containing the proposed reservoirs. Water retention in the drainages will establish wet meadow vegetation in the bottoms that will provide succulent vegetation for sage grouse chicks. Map 2 shows the locations of the proposed projects.

The proposed wells will be constructed to provide 1,000 to 2,000 gallons per minute of water. The water will be used to fill the seven reservoirs as well as four natural potholes. Natural drainages and the existing MacFarlane Ditch will convey the well water to the drainages, potholes and proposed reservoirs. Power for the well pumps will be obtained from an existing power line located adjacent to Jackson County Road 28. Map 2 designates the locations for the proposed improvement projects.

Alternative water sources for the south Hebron tract exist in MacFarlane Reservoir and Lost Creek. Further investigations into the water sources may show these sources to be more feasible than the three proposed wells.

Fiscal Year 1983:

To "block up" the north and south tracts of the Hebron Slough area, 1,160 acres of private land are proposed for acquisition and inclusion into the Hebron Slough area. The 1,160 acres are owned by four different landowners. Livestock grazing is the primary use of the lands; however, the land owned by O. G. Mellen is irrigated hay meadow. Public lands of commensurate value and located in areas desirable to the individual landowners will be offered in exchange. Map 3 delineates the private land earmarked for acquisition.

The 1,160 acres of private land marked for acquisition contains approximately 70 acres of natural potholes that will become available for improvement. The potholes will be filled with water from the wells discussed earlier and will provide additional permanent water to establish aquatic and semi-aquatic vegetation. The natural drainage bottoms located in the private land will provide natural water conveyance systems as well as sage grouse brooding habitat and waterfowl nesting cover.

Islands will be constructed in the natural potholes to add edge effect and loafing areas. Canada geese may also use these islands for nesting sites if water is permanently retained in the reservoirs.

If additional water is available, a series of reservoirs and islands will be constructed in the private land earmarked for acquisiton. The reservoirs and islands will be constructed similar to those mentioned earlier in this report and will provide additional habitat for waterfowl and shorebirds.

Fiscal Year 1984:

To further achieve a manageable unit (objective #2), public land in the south tract of the project area, 880 acres of Colorado State Land Board land, and private land are proposed for acquiring control by exchange or cooperative agreement (see map 3). This control will tie MacFarlane Reservoir and the Hebron Slough area into a solid, manageable unit. The lands marked for acquisition will be managed primarily as waterfowl habitat. The existing MacFarlane Ditch located through the south tract of the area will be used to convey water from the proposed wells to reservoirs and potholes.

The entire Hebron Slough area will be placed in an allotment management plan during FY 84. The allotment management plan (AMP) will be designed to avoid livestock grazing-waterfowl nesting conflicts. Waterfowl nesting cover vegetation such as greasewood, saltgrass, and western wheatgrass will be considered the key wildlife vegetative species in the grazing system. The AMP will be designed to enhance the growth and reproduction of the key vegetative species.

A recreation-visitor use plan will also be devised during FY 84. A transportation plan, wildlife viewing tour routes, and parking areas will be addressed in the recreation plan. Closed areas to avoid visitor conflicts with waterfowl nesting will be identified and treated as necessary. Public use of MacFarlane Reservoir will be regulated to avoid conflicts with molting waterfowl.

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